TSCA NON-CONFIDENTIAL BUSINESS INFORMATION

DOCUMENT DESCRIPTION	DOCUMENT CONTROL NUMBER	DATE RECEIVED
Cair	90-890000239	6-9-89

COMMENTS:

DOES NOT CONTAIN CBI

BAKER
PERFORMANCE
CHEMICALS, INC.
A Baker Hughes company

EPA-OTS

000657785

90-890000239

June 9, 1989

Document Processing Center
Office of Toxic Substances, TS-790
U.S. Environmental Protection Agency
401 M Street, S.W.
Washington, D.C.   20460

Attention: CAIR Reporting Office

Dear Sirs:
    Enclosed you will find our completed form fulfilling
the reporting requirements under CAIR for Toluene
diisocyanate (TDI).

    If any additional information is needed you can
contact me at 713/599-7424.

                    Sincerely,

                    Clayton K. Curtis
                    Regulatory Affairs Specialist

CKC:sa

Encls.

&EPA

Form Approved
OMB No. 2010-0019
Approval Expires 12-31-89

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Comprehensive Assessment Information Rule

REPORTING FORM

When completed, send this form to:	For Agency Use Only:
Document Processing Center	Date of Receipt: _____
Office of Toxic Substances, TS-790	
U.S. Environmental Protection Agency	Document
401 M Street, SW	Control Number: _____
Washington, DC 20460	
Attention: CAIR Reporting Office	Docket Number: _____

EPA Form 7710-52

SECTION 1 GENERAL MANUFACTURER, IMPORTER, AND PROCESSOR INFORMATION

PART A GENERAL REPORTING INFORMATION

1.01 This Comprehensive Assessment Information Rule (CAIR) Reporting Form has been

completed in response to the <u>Federal Register</u> Notice of..... [1][2] [2][2] [8][8]

CBI
                                                                               mo.   day   year

[_] a. If a Chemical Abstracts Service Number (CAS No.) is provided in the <u>Federal</u>

<u>Register</u>, list the CAS No. .... [0][2][6][4][7][1]-[6][2]-[5]

b. If a chemical substance CAS No. is not provided in the <u>Federal Register</u>, list
either (i) the chemical name, (ii) the mixture name, or (iii) the trade name of
the chemical substance as provided in the <u>Federal Register</u>.

(i)   Chemical name as listed in the rule ......   N/A

(ii) Name of mixture as listed in the rule ....   N/A

(iii) Trade name as listed in the rule ....   N/A

c. If a chemical category is provided in the <u>Federal Register</u>, report the name of
the category as listed in the rule, the chemical substance CAS No. you are
reporting on which falls under the listed category, and the chemical name of the
substance you are reporting on which falls under the listed category.

Name of category as listed in the rule ....   N/A

CAS No. of chemical substance .... [_][_][N][7][A][_]-[_][_]-[_]

Name of chemical substance ....   N/A

1.02 Identify your reporting status under CAIR by circling the appropriate response(s).

CBI Manufacturer 1

[_] Importer 2

     Processor .... ③

     X/P manufacturer reporting for customer who is a processor 4

     X/P processor reporting for customer who is a processor 5

[_] Mark (X) this box if you attach a continuation sheet.

1.03 Does the substance you are reporting on have an "x/p" designation associated with it in the above-listed Federal Register Notice?

CBI

[_]

Yes .... [X] Go to question 1.04

No .... [_] Go to question 1.05

1.04 a. Do you manufacture, import, or process the listed substance and distribute it under a trade name(s) different than that listed in the Federal Register Notice? Circle the appropriate response.

CBI

[_]

Yes 1

(No) 2

b. Check the appropriate box below:

[_] You have chosen to notify your customers of their reporting obligations

Provide the trade name(s) .... _____

_____

[_] You have chosen to report for your customers

[_] You have submitted the trade name(s) to EPA one day after the effective date of the rule in the Federal Register Notice under which you are reporting.

1.05 If you buy a trade name product and are reporting because you were notified of your reporting requirements by your trade name supplier, provide that trade name.

CBI

[_]

Trade name .... Mondur TD-80 Type B _____

Is the trade name product a mixture? Circle the appropriate response.

Yes 1

(No) 2

1.06 Certification -- The person who is responsible for the completion of this form must sign the certification statement below:

CBI

[_]

"I hereby certify that, to the best of my knowledge and belief, all information entered on this form is complete and accurate."

Richard E. Mertz	_Richard E. Mertz_	6/9/89
NAME	SIGNATURE	DATE SIGNED
Vice President - Manufacturing	(713) 599-7400	
TITLE	TELEPHONE NO.	

[_] Mark (X) this box if you attach a continuation sheet.

1.07 Exemptions From Reporting -- If you have provided EPA or another Federal agency with the required information on a CAIR Reporting Form for the listed substance within the past 3 years, and this information is current, accurate, and complete for the time period specified in the rule, then sign the certification below. You are required to complete section 1 of this CAIR form and provide any information now required but not previously submitted. Provide a copy of any previous submissions along with your Section 1 submission.

CBI

[_]

"I hereby certify that, to the best of my knowledge and belief, all required information which I have not included in this CAIR Reporting Form has been submitted to EPA within the past 3 years and is current, accurate, and complete for the time period specified in the rule."

N/A

NAME	SIGNATURE	DATE SIGNED

(_____) _____ - _____

TITLE	TELEPHONE NO.	DATE OF PREVIOUS SUBMISSION

1.08 CBI Certification -- If you have asserted any CBI claims in this report you must certify that the following statements truthfully and accurately apply to all of those confidentiality claims which you have asserted.

CBI

[_]

"My company has taken measures to protect the confidentiality of the information, and it will continue to take these measures; the information is not, and has not been, reasonably ascertainable by other persons (other than government bodies) by using legitimate means (other than discovery based on a showing of special need in a judicial or quasi-judicial proceeding) without my company's consent; the information is not publicly available elsewhere; and disclosure of the information would cause substantial harm to my company's competitive position."

NAME	SIGNATURE	DATE SIGNED

(_____) _____ - _____

TITLE	TELEPHONE NO.	

N/A

[_] Mark (X) this box if you attach a continuation sheet.

PART B   CORPORATE DATA

1.09   Facility Identification

CBI   Name [B][A][K][E][R][_][P][E][R][F][O][R][M][A][N][C][E][_][C][H][E][M][I][C][A][L]

[_]   Address [U][S][_][H][W][Y][_][9][0][_][_][_][_][_][_][_][_][_][_][_][_][_][_][_][_][_]
                                         Street

              [D][A][Y][T][O][N][_]
                                         City

                            [T][X]   [7][7][5][3][5]--[_][_][_][_]
                            State   Zip

        Dun & Bradstreet Number ....[0][0]-[8][3][5]-[2][3][8][7]

        EPA ID Number ....TXD....[0][0][9][5][7][1][7][6][8]

        Employer ID Number ....[9][5][1][6][8][9][9][8][3]

        Primary Standard Industrial Classification (SIC) Code ....[2][8][9][9]

        Other SIC Code ....[2][8][4][3]

        Other SIC Code ....[_][_][_][_]

1.10   Company Headquarters Identification

CBI   Name [B][A][K][E][R][_][P][E][R][F][O][R][M][A][N][C][E][_][_][C][H][E][M][I][C][A][L]

[_]   Address [P][O][_][B][O][X][_][2][7][7][1][4][_][_][_][_][_][_][_][_][_][_][_][_][_][_]
                                         Street

              [H][O][U][S][T][O][N][_]
                                         City

                            [T][X]   [7][7][2][2][7]--[7][7][1][4]
                            State   Zip

        Dun & Bradstreet Number ....[0][0]-[8][3][5]-[2][3][8][7]

        Employer ID Number ....9.[5][1][6][8][9][9][9][8][3]

[_] Mark (X) this box if you attach a continuation sheet.

6

1.11 Parent Company Identification

CBI   Name [B][A][K][E][R][_][P][E][R][F][O][R][M][A][N][C][E][_][C][H][E][M][I][C][A][L]

[_] Address [3][9][2][0][_][E][S][S][E][X][_][L][A][N][E][_][_][_][_][_][_][_][_][_][_][_]
                                                    Street

        [H][O][U][S][T][O][N][_][_][_][_][_][_][_][_][_][_][_][_][_][_][_][_]
                                                    City

                                    [T][X]   [7][7][2][2][7]--[7][7][1][4]
                                    State   Zip

        Dun & Bradstreet Number ....[0][7]-[4][9][8]-[7][9][0][9]

1.12 Technical Contact

CBI   Name [C][L][A][Y][T][O][N][_][C][U][R][T][I][S][_][_][_][_][_][_][_][_][_][_][_][_]

[_] Title [R][I][S][K][_][A][N][D][_][R][E][G][U][L][A][T][O][R][Y][_][S][P][E][C][_][_]

     Address [P][O][_][B][O][X][_][2][7][7][1][4][_][_][_][_][_][_][_][_][_][_][_][_]
                                                    Street

        [H][O][U][S][T][O][N][_][_][_][_][_][_][_][_][_][_][_][_][_][_][_][_]
                                                    City

                                    [T][X]   [7][7][2][2][7]--[7][7][1][4]
                                    State   Zip

        Telephone Number ....[_][_][_]-[_][_][_]-[_][_][_][_]

1.13 This reporting year is from .... [0][1] [8][8] to [1][2] [8][8]
                                                          Mo.   Year   Mo.   Year

[_] Mark (X) this box if you attach a continuation sheet.

1.14 Facility Acquired -- If you purchased this facility during the reporting year, provide the following information about the seller:

CBI Name of Seller [‾]

[‾] Mailing Address [‾]
                                          Street

                     [‾]
                                          City

     N/A
                                  [‾]‾]   [‾]‾]‾]‾]‾]--[‾]‾]‾]‾]
                                  State   Zip

     Employer ID Number ....[‾]‾]‾]‾]‾]‾]‾]‾]‾]

     Date of Sale ....[‾]‾] [‾]‾] [‾]‾]
                                                          Mo.   Day   Year

     Contact Person [‾]

     Telephone Number ....[‾]‾]‾]-[‾]‾]‾]‾]-[‾]‾]‾]‾]

1.15 Facility Sold -- If you sold this facility during the reporting year, provide the following information about the buyer:

CBI Name of Buyer [‾]

[‾] Mailing Address [‾]
                                          Street

                     [‾]
                                          City

   N/A
                                  [‾]‾]   [‾]‾]‾]‾]‾]--[‾]‾]‾]‾]
                                  State   Zip

     Employer ID Number ....[‾]‾]‾]‾]‾]‾]‾]‾]‾]

     Date of Purchase ....[‾]‾] [‾]‾] [‾]‾]
                                                          Mo.   Day   Year

     Contact Person [‾]

     Telephone Number ....[‾]‾]‾]-[‾]‾]‾]‾]-[‾]‾]‾]‾]

[‾] Mark (X) this box if you attach a continuation sheet.

1.16 For each classification listed below, state the quantity of the listed substance that was manufactured, imported, or processed at your facility during the reporting year.

CBI

[_]

Classification	Quantity (kg/yr)
Manufactured	N/A
Imported	N/A
Processed (include quantity repackaged)	400

Of that quantity manufactured or imported, report that quantity:

In storage at the beginning of the reporting year	N/A
For on-site use or processing	N/A
For direct commercial distribution (including export)	N/A
In storage at the end of the reporting year	N/A

Of that quantity processed, report that quantity:

In storage at the beginning of the reporting year	665
Processed as a reactant (chemical producer)	400
Processed as a formulation component (mixture producer)	N/A
Processed as an article component (article producer)	N/A
Repackaged (including export)	N/A
In storage at the end of the reporting year	515

[_] Mark (X) this box if you attach a continuation sheet.

PART C   IDENTIFICATION OF MIXTURES

1.17   Mixture -- If the listed substance on which you are required to report is a mixture
or a component of a mixture, provide the following information for each component
chemical.   (If the mixture composition is variable, report an average percentage of
each component chemical for all formulations.)

CBI

[ ]

Component Name	Supplier Name	Average % Composition by Weight (specify precision, e.g., 45% ± 0.5%)
	N/A	
		Total 100%

[ ] Mark (X) this box if you attach a continuation sheet.

SECTION 2 MANUFACTURER, IMPORTER, AND PROCESSOR VOLUME AND USE

2.01   State the total number of years, including the reporting year, that your facility has
CBI   manufactured, imported, or processed the listed substance.

[_]
                                                    N/A
       Number of years manufactured .... _____ yrs.

       Number of years imported .... _____ yrs.

       Number of years processed .... _____ yrs.

2.02   State the quantity of the listed substance that your facility manufactured, imported,
       or processed during the corporate fiscal year preceding the reporting year.
CBI
                                          N/A
[_]   Year ending .... [_]_] [_]_]
                                                                       Mo.   Year

       Quantity manufactured .... _____ kg

       Quantity imported .... _____ kg

       Quantity processed .... _____ kg

2.03   State the quantity of the listed substance that your facility manufactured, imported,
       or processed during the 2 corporate fiscal years preceding the reporting year in
       descending order.
CBI
                                          N/A
[_]   Year ending .... [_]_] [_]_]
                                                                       Mo.   Year

       Quantity manufactured .... _____ kg

       Quantity imported .... _____ kg

       Quantity processed .... _____ kg

       Year ending .... [_]_] [_]_]
                                                                    Mo.   Year

       Quantity manufactured .... _____ kg

       Quantity imported .... _____ kg

       Quantity processed .... _____ kg

[_] Mark (X) this box if you attach a continuation sheet.

2.04 State the quantity of the listed substance that your facility manufactured, imported, or processed during the 3 corporate fiscal years preceding the reporting year in descending order.

CBI

[ ] Year ending .... [1][2] [8][7]
                                                                      Mo.   Year

   Quantity manufactured .... N/A   kg

   Quantity imported .... N/A   kg

   Quantity processed 382   kg

   Year ending .... [1][2] [8][6]
                                                                      Mo.   Year

   Quantity manufactured .... N/A   kg

   Quantity imported .... N/A   kg

   Quantity processed 192   kg

   Year ending .... [1][2] [8][5]
                                                                      Mo.   Year

   Quantity manufactured .... N/A   kg

   Quantity imported .... N/A   kg

   Quantity processed 689   kg

2.05 Specify the manner in which you manufactured the listed substance. Circle all appropriate process types.

CBI

[ ]

   Continuous process 1

   Semicontinuous process 2

   Batch process 3

            N/A

[ ] Mark (X) this box if you attach a continuation sheet.

2.06   Specify the manner in which you processed the listed substance.   Circle all
CBI   appropriate process types.

[_]
       Continuous process 1

       Semicontinuous process 2

       Batch process ....(3)

2.07   State your facility's name-plate capacity for manufacturing or processing the listed
       substance.   (If you are a batch manufacturer or batch processor, do not answer this
CBI   question.)

[_]
       Manufacturing capacity .... ____N/A____ kg/yr

       Processing capacity .... ____N/A____ kg/yr

---

2.08   If you intend to increase or decrease the quantity of the listed substance
       manufactured, imported, or processed at any time after your current corporate fiscal
       year, estimate the increase or decrease based upon the reporting year's production
CBI   volume.

[_]

	Manufacturing Quantity (kg)	Importing Quantity (kg)	Processing Quantity (kg)
Amount of increase	N/A	N/A	N/A
Amount of decrease	N/A	N/A	N/A

[_] Mark (X) this box if you attach a continuation sheet.

2.09 For the three largest volume manufacturing or processing process types involving the listed substance, specify the number of days you manufactured or processed the listed substance during the reporting year. Also specify the average number of hours per day each process type was operated. (If only one or two operations are involved, list those.)

CBI

[ ]

	Days/Year	Average Hours/Day
Process Type #1 (The process type involving the largest quantity of the listed substance.)		
Manufactured	N/A	N/A
Processed	6	23
Process Type #2 (The process type involving the 2nd largest quantity of the listed substance.)		
Manufactured	N/A	N/A
Processed	N/A	N/A
Process Type #3 (The process type involving the 3rd largest quantity of the listed substance.)		
Manufactured	N/A	N/A
Processed	N/A	N/A

2.10 State the maximum daily inventory and average monthly inventory of the listed substance that was stored on-site during the reporting year in the form of a bulk
CBI chemical.

[ ]

Maximum daily inventory	N/A	kg
Average monthly inventory	N/A	kg

[ ] Mark (X) this box if you attach a continuation sheet.

2.11 Related Product Types -- List any byproducts, coproducts, or impurities present with the listed substance in concentrations greater than 0.1 percent as it is manufactured, imported, or processed. The source of byproducts, coproducts, or impurities means the source from which the byproducts, coproducts, or impurities are made or introduced into the product (e.g., carryover from raw material, reaction product, etc.).

CBI

[_]

N/A

CAS No.	Chemical Name	Byproduct, Coproduct or Impurity[1]	Concentration (%) (specify ± % precision)	Source of By-products, Co-products, or Impurities
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

----

[1]Use the following codes to designate byproduct, coproduct, or impurity:

B = Byproduct
C = Coproduct
I = Impurity

[_] Mark (X) this box if you attach a continuation sheet.

15

2.12 Existing Product Types -- List all existing product types which you manufactured, imported, or processed using the listed substance during the reporting year. List the quantity of listed substance you use for each product type as a percentage of the total volume of listed substance used during the reporting year. Also list the

CBI quantity of listed substance used captively on-site as a percentage of the value listed under column b., and the types of end-users for each product type. (Refer to

[__] the instructions for further explanation and an example.)

a. Product Types[1]	b. % of Quantity Manufactured, Imported, or Processed	c. % of Quantity Used Captively On-Site	d. Type of End-Users[2]
X	100	N/A	I

---

[1]Use the following codes to designate product types:

A = Solvent
B = Synthetic reactant
C = Catalyst/Initiator/Accelerator/ Sensitizer
D = Inhibitor/Stabilizer/Scavenger/ Antioxidant
E = Analytical reagent
F = Chelator/Coagulant/Sequestrant
G = Cleanser/Detergent/Degreaser
H = Lubricant/Friction modifier/Antiwear agent
I = Surfactant/Emulsifier
J = Flame retardant
K = Coating/Binder/Adhesive and additives

L = Moldable/Castable/Rubber and additives
M = Plasticizer
N = Dye/Pigment/Colorant/Ink and additives
O = Photographic/Reprographic chemical and additives
P = Electrodeposition/Plating chemicals
Q = Fuel and fuel additives
R = Explosive chemicals and additives
S = Fragrance/Flavor chemicals
T = Pollution control chemicals
U = Functional fluids and additives
V = Metal alloy and additives
W = Rheological modifier
X = Other (specify) Oilfield Production Chemicals

[2]Use the following codes to designate the type of end-users:

I = Industrial   CS = Consumer
CM = Commercial   H = Other (specify) _____

[__] Mark (X) this box if you attach a continuation sheet.

16

2.13 Expected Product Types -- Identify all product types which you expect to manufacture, import, or process using the listed substance at any time after your current corporate fiscal year. For each use, specify the quantity you expect to manufacture, import, or process for each use as a percentage of the total volume of listed substance used during the reporting year. Also list the quantity of listed substance

CBI used captively on-site as a percentage of the value listed under column b., and the types of end-users for each product type. (Refer to the instructions for further

[__] explanation and an example.)

a.	b.	c.	d.
Product Types[1]	% of Quantity Manufactured, Imported, or Processed	% of Quantity Used Captively On-Site	Type of End-Users[2]
X	100	N/A	I

---

[1]Use the following codes to designate product types:

A = Solvent
B = Synthetic reactant
C = Catalyst/Initiator/Accelerator/ Sensitizer
D = Inhibitor/Stabilizer/Scavenger/ Antioxidant
E = Analytical reagent
F = Chelator/Coagulant/Sequestrant
G = Cleanser/Detergent/Degreaser
H = Lubricant/Friction modifier/Antiwear agent
I = Surfactant/Emulsifier
J = Flame retardant
K = Coating/Binder/Adhesive and additives

L = Moldable/Castable/Rubber and additives
M = Plasticizer
N = Dye/Pigment/Colorant/Ink and additives
O = Photographic/Reprographic chemical and additives
P = Electrodeposition/Plating chemicals
Q = Fuel and fuel additives
R = Explosive chemicals and additives
S = Fragrance/Flavor chemicals
T = Pollution control chemicals
U = Functional fluids and additives
V = Metal alloy and additives
W = Rheological modifier
X = Other (specify) Oilfield Production Chemicals

[2]Use the following codes to designate the type of end-users:

I = Industrial
CM = Commercial

CS = Consumer
H = Other (specify) _____

[__] Mark (X) this box if you attach a continuation sheet.

2.14 Final Product -- Complete the following table for each type of final product
CBI manufactured, imported, or processed at your facility that contains the listed
substance other than as an impurity.

[ ]

a. Product Type[1]	b. Final Product's Physical Form[2]	c. Average % Composition of Listed Substance in Final Product	d. Type of End-Users[3]
N/A	N/A	N/A	N/A

----

[1]Use the following codes to designate product types:

A = Solvent
B = Synthetic reactant
C = Catalyst/Initiator/Accelerator/ Sensitizer
D = Inhibitor/Stabilizer/Scavenger/ Antioxidant
E = Analytical reagent
F = Chelator/Coagulant/Sequestrant
G = Cleanser/Detergent/Degreaser
H = Lubricant/Friction modifier/Antiwear agent
I = Surfactant/Emulsifier
J = Flame retardant
K = Coating/Binder/Adhesive and additives

L = Moldable/Castable/Rubber and additives
M = Plasticizer
N = Dye/Pigment/Colorant/Ink and additives
O = Photographic/Reprographic chemical and additives
P = Electrodeposition/Plating chemicals
Q = Fuel and fuel additives
R = Explosive chemicals and additives
S = Fragrance/Flavor chemicals
T = Pollution control chemicals
U = Functional fluids and additives
V = Metal alloy and additives
W = Rheological modifier
X = Other (specify) _____

[2]Use the following codes to designate the final product's physical form:

A = Gas
B = Liquid
C = Aqueous solution
D = Paste
E = Slurry
F1 = Powder

F2 = Crystalline solid
F3 = Granules
F4 = Other solid
G = Gel
H = Other (specify) _____

[3]Use the following codes to designate the type of end-users:

I = Industrial
CM = Commercial

CS = Consumer
H = Other (specify) _____

[ ] Mark (X) this box if you attach a continuation sheet.

2.15 Circle all applicable modes of transportation used to deliver bulk shipments of the
CBI listed substance to off-site customers.

[_] Truck 1

     Railcar 2

N/A Barge, Vessel 3

     Pipeline 4

     Plane 5

     Other (specify) _____ 6

2.16 Customer Use -- Estimate the quantity of the listed substance used by your customers
     or prepared by your customers during the reporting year for use under each category
CBI of end use listed (i-iv).

[_]
     Category of End Use

     i.   Industrial Products

           Chemical or mixture .... ___N/A_____ kg/yr

           Article .... ___N/A_____ kg/yr

     ii.   Commercial Products

           Chemical or mixture .... ___N/A_____ kg/yr

           Article .... ___N/A_____ kg/yr

     iii. Consumer Products

           Chemical or mixture .... ___N/A_____ kg/yr

           Article .... ___N/A_____ kg/yr

     iv.   Other

           Distribution (excluding export) .... ___N/A_____ kg/yr

           Export .... ___N/A_____ kg/yr

           Quantity of substance consumed as reactant ...... ___N/A_____ kg/yr

           Unknown customer uses .... ___N/A_____ kg/yr

---

[_] Mark (X) this box if you attach a continuation sheet.

2.17 State the quantity of the listed substance that you exported during the reporting
CBI year.

[__]

In bulk .... _____N/A_____ kg/yr

As a mixture .... _____N/A_____ kg/yr

In articles .... _____N/A_____ kg/yr

[__] Mark (X) this box if you attach a continuation sheet.

PART A   GENERAL DATA

3.01   Specify the quantity purchased and the average price paid for the listed substance
for each major source of supply listed. Product trades are treated as purchases.
CBI   The average price is the market value of the product that was traded for the listed
substance.

[__]

Source of Supply	Quantity (kg)	Average Price ($/kg)
The listed substance was manufactured on-site.	N/A	N/A
The listed substance was transferred from a different company site.	N/A	N/A
The listed substance was purchased directly from a manufacturer or importer.	250	∉ 3,014
The listed substance was purchased from a distributor or repackager.	N/A	N/A
The listed substance was purchased from a mixture producer.	N/A	N/A

3.02   Circle all applicable modes of transportation used to deliver the listed substance to
CBI   your facility.

[__]

Truck .... ①

Railcar 2

Barge, Vessel 3

Pipeline 4

Plane 5

Other (specify) _____   6

[__]   Mark (X) this box if you attach a continuation sheet.

3.03 a. Circle all applicable containers used to transport the listed substance to your
CBI   facility.

[̄]

    Bags 1

    Boxes 2

    Free standing tank cylinders 3

    Tank rail cars 4

    Hopper cars 5

    Tank trucks 6

    Hopper trucks 7

    Drums ....⑧

    Pipeline 9

    Other (specify) _____ 10

  b. If the listed substance is transported in pressurized tank cylinders, tank rail
     cars, or tank trucks, state the pressure of the tanks.

     Tank cylinders .... __N/A__ mmHg

     Tank rail cars .... __N/A__ mmHg

     Tank trucks .... __N/A__ mmHg

[̄] Mark (X) this box if you attach a continuation sheet.

PART B RAW MATERIAL IN THE FORM OF A MIXTURE

3.04 If you obtain the listed substance in the form of a mixture, list the trade name(s)
      of the mixture, the name of its supplier(s) or manufacturer(s), an estimate of the
CBI   average percent composition by weight of the listed substance in the mixture, and the
      amount of mixture processed during the reporting year.
[__]

Trade Name	Supplier or Manufacturer	Average % Composition by Weight (specify ± % precision)	Amount Processed (kg/yr)
N/A	N/A	N/A	N/A

[__] Mark (X) this box if you attach a continuation sheet.

PART C RAW MATERIAL VOLUME

3.05 State the quantity of the listed substance used as a raw material during the
CBI   reporting year in the form of a class I chemical, class II chemical, or polymer, and
      the percent composition, by weight, of the listed substance.
[__]

	Quantity Used (kg/yr)	% Composition by Weight of Listed Substance in Raw Material (specify ± % precision)
Class I chemical	400	﹥99.7%
Class II chemical	N/A	N/A
Polymer	N/A	N/A

[__] Mark (X) this box if you attach a continuation sheet.

SECTION 4 PHYSICAL/CHEMICAL PROPERTIES

General Instructions:

If you are reporting on a mixture as defined in the glossary, reply to questions in Section 4 that are inappropriate to mixtures by stating "NA -- mixture."

For questions 4.06-4.15, if you possess any hazard warning statement, label, MSDS, or other notice that addresses the information requested, you may submit a copy or reasonable facsimile in lieu of answering those questions which it addresses.

PART A PHYSICAL/CHEMICAL DATA SUMMARY

4.01 Specify the percent purity for the three major[1] technical grade(s) of the listed substance as it is manufactured, imported, or processed. Measure the purity of the

CBI substance in the final product form for manufacturing activities, at the time you

[_] import the substance, or at the point you begin to process the substance.

	Manufacture	Import	Process
Technical grade #1	N/A % purity	N/A % purity	>99.7 % purity
Technical grade #2	N/A % purity	N/A % purity	N/A % purity
Technical grade #3	N/A % purity	N/A % purity	N/A % purity

---

[1]Major = Greatest quantity of listed substance manufactured, imported or processed.

4.02 Submit your most recently updated Material Safety Data Sheet (MSDS) for the listed substance, and for every formulation containing the listed substance. If you possess an MSDS that you developed and an MSDS developed by a different source, submit your version. Indicate whether at least one MSDS has been submitted by circling the appropriate response.

Yes .... (1)

No 2

Indicate whether the MSDS was developed by your company or by a different source.

Your company 1

Another source .... (2)

[X] Mark (X) this box if you attach a continuation sheet.

4.03 Submit a copy or reasonable facsimile of any hazard information (other than an MSDS) that is provided to your customers/users regarding the listed substance or any formulation containing the listed substance. Indicate whether this information has been submitted by circling the appropriate response.

Yes 1

No .... (2)

4.04 For each activity that uses the listed substance, circle all the applicable number(s) corresponding to each physical state of the listed substance during the activity listed. Physical states for importing and processing activities are determined at the time you import or begin to process the listed substance. Physical states for
CBI manufacturing, storage, disposal and transport activities are determined using the final state of the product.
[_]

	Physical State				
Activity	Solid	Slurry	Liquid	Liquified Gas	Gas
Manufacture	1	2	3	4	5
Import	1	2	3	4	5
Process	1	2	(3)	4	5
Store	1	2	(3)	4	5
Dispose	1	2	3	4	5
Transport	1	2	3	4	5

[_] Mark (X) this box if you attach a continuation sheet.

4.05 Particle Size -- If the listed substance exists in particulate form during any of the following activities, indicate for each applicable physical state the size and the percentage distribution of the listed substance by activity. Do not include particles $\geq$10 microns in diameter. Measure the physical state and particle sizes for importing and processing activities at the time you import or begin to process the

CBI listed substance. Measure the physical state and particle sizes for manufacturing storage, disposal and transport activities using the final state of the product.

[_]

Physical State		Manufacture	Import	Process	Store	Dispose	Transport
Dust	<1 micron	N/A					
	1 to <5 microns						
	5 to <10 microns						
Powder	<1 micron	N/A					
	1 to <5 microns						
	5 to <10 microns						
Fiber	<1 micron	N/A					
	1 to <5 microns						
	5 to <10 microns						
Aerosol	<1 micron	N/A					
	1 to <5 microns						
	5 to <10 microns						

[_] Mark (X) this box if you attach a continuation sheet.

PART B   FIRE, EXPLOSION, AND OTHER HAZARD DATA

4.06   For each physical state of the listed substance, specify the corresponding
       flashpoint, and the test method used to derive the flashpoint value.

       Solid   N/A

       Flashpoint .... _____ °C

       Test method .... _____

       Liquid

       Flashpoint .... _____ °C

       Test method .... _____

       Gas/Vapor

       Flashpoint .... _____ °C

       Test method .... _____

          Indicate if hazard information/MSDS has been submitted in lieu of
          response by circling the appropriate response.

          Yes 1

          No 2

4.07   Indicate the temperature at which the listed substance undergoes autopolymerization
       or autodecomposition.
                                          N/A
       Autopolymerizes at .... _____ °C

       Autodecomposes at .... _____ °C

          Indicate if hazard information/MSDS has been submitted in lieu of
          response by circling the appropriate response.

          Yes 1

          No 2

[⎯]   Mark (X) this box if you attach a continuation sheet.

4.08 Indicate the flammable limits in air (% by volume) for the listed substance at standard temperature and pressure.

N/A

Lower limit .... _____ %

Upper limit .... _____ %

Indicate if hazard information/MSDS has been submitted in lieu of response by circling the appropriate response.

N/A

Yes 1

No 2

[□] Mark (X) this box if you attach a continuation sheet.

4.09 Extinguishing Media -- Identify (Y/N/NA/UK) all known methods for extinguishing flames caused by each product type which contains the listed substance. (Refer to the instructions for the definition of Y, N, NA and UK.)

Product Types Containing the Listed Substance[1]

Extinguishing Media	N/A	1	2	3	4	5	6
Water		___	___	___	___	___	___
Foam		___	___	___	___	___	___
CO_2		___	___	___	___	___	___
Dry chemical (e.g., sodium bicarbonate)		___	___	___	___	___	___
Halogenated hydrocarbon (e.g., carbon tetrachloride, methyl bromide)		___	___	___	___	___	___
Other (specify) _____		___	___	___	___	___	___

> Indicate if hazard information/MSDS has been submitted in lieu of response by circling the appropriate response.
>
> Yes 1
>
> No 2

----

[1]Identify the product types listed under each column (1-6) in the following table:

Product Type No.	N/A	Product Type Identity
1		_____
2		_____
3		_____
4		_____
5		_____
6		_____

[ ] Mark (X) this box if you attach a continuation sheet.

4.10 Special Firefighting Procedures -- Identify (Y/N/NA/UK) all known restrictions on firefighting procedures used to combat fires caused by each product type which contains the listed substance. (Refer to the instructions for definitions of Y, N, NA and UK.)

N/A

Product Types Containing the Listed Substance[1]

Special Firefighting Procedures	1	2	3	4	5	6
Do not use water	___	___	___	___	___	___
Do not increase air pressure	___	___	___	___	___	___
Other (specify) _____	___	___	___	___	___	___

Indicate if hazard information/MSDS has been submitted in lieu of response by circling the appropriate response.

Yes 1

No 2

----

[1]Identify the product types listed under each column (1-6) in the following table:

Product Type No.	N/A	Product Type Identity
1		_____
2		_____
3		_____
4		_____
5		_____
6		_____

[ ] Mark (X) this box if you attach a continuation sheet.

4.11 Incompatibility -- List all chemicals, materials, or categories of chemicals or materials that you know are incompatible with the listed substance and the reason why they are incompatible. (Refer to the instructions for further explanation and an example.)

CAS No.	Name	Reaction (specify)
N/A	N/A	N/A

Indicate if hazard information/MSDS has been submitted in lieu of response by circling the appropriate response.

N/A

Yes 1

No 2

4.12 Autoxidation -- Is the listed substance capable of autoxidation? Circle the appropriate response.

N/A

Yes 1

No 2

Unknown 3

Indicate if hazard information/MSDS has been submitted in lieu of response by circling the appropriate response.

Yes 1

No 2

[ ] Mark (X) this box if you attach a continuation sheet.

4.13 Indicate the autoignition temperature for the listed substance and the test method used to derive this value.

Autoignition temperature ....N/A.......................... _____ °C

Test method .... _____

   Indicate if hazard information/MSDS has been submitted in lieu of response by circling the appropriate response.

   Yes 1

   No 2

4.14 Vapor in Cargo Tanks -- If storing the listed substance in a cargo tank causes vapor problems, such as peroxide formation, reaction with moisture, etc., specify the problem and necessary controls or restrictions used to remedy each problem.

Vapor Problem	Controls/Restrictions
Peroxide formation	N/A
Reaction with moisture	
Combustion	
Other (specify)	

   Indicate if hazard information/MSDS has been submitted in lieu of response by circling the appropriate response.

   Yes 1

   No 2

[_] Mark (X) this box if you attach a continuation sheet.

4.15   Shipment Procedures -- If you use an inhibitor or stabilizer when shipping the
       listed substance in bulk form, specify its name, whether it inhibits or stabilizes
CBI   the listed substance, the amount normally added, and the duration of its
       effectiveness.
[ ]

N/A Name of Additive	Inhibitor or Stabilizer[1]	Amount Normally Added (ppm or %)	Duration of Effectiveness (specify units)
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Indicate if hazard information/MSDS has been submitted in lieu of
response by circling the appropriate response.

Yes 1

No 2

----

[1]Use the following codes to designate inhibitor and stabilizer:

I = Inhibitor
S = Stabilizer

[ ]   Mark (X) this box if you attach a continuation sheet.

SECTION 5   ENVIRONMENTAL FATE

PART A   RATE CONSTANTS AND TRANSFORMATION PRODUCTS

5.01 Indicate the rate constants for the following transformation processes.

   a. Photolysis:

       Absorption spectrum coefficient (peak) .... ___UK___ (1/M cm) at __UK__ nm

       Reaction quantum yield, ϕ .... __UK_____ at __UK__ nm

       Direct photolysis rate constant, k_p, at ... __UK____ 1/hr ___UK__ latitude

   b. Oxidation constants at 25°C:

       For $^1O_2$ (singlet oxygen), k_{ox} .... _____UK_____ 1/M hr

       For RO_2 (peroxy radical), k_{ox} .... _____UK_____ 1/M hr

   c. Five-day biochemical oxygen demand, BOD_5 ..._____UK_____ mg/l

   d. Biotransformation rate constant:

       For bacterial transformation in water, k_b..._____UK_____ 1/hr

       Specify culture .... _____UK_____

   e. Hydrolysis rate constants:

       For base-promoted process, k_B .... _____UK_____ 1/M hr

       For acid-promoted process, k_A .... _____UK_____ 1/M hr

       For neutral process, k_N .... _____UK_____ 1/hr

   f. Chemical reduction rate (specify conditions)_____UK_____

       _____

   g. Other (such as spontaneous degradation) ... _____

       _____

      Information not known at this time.

[_] Mark (X) this box if you attach a continuation sheet.

PART B PARTITION COEFFICIENTS

5.02 a. Specify the half-life of the listed substance in the following media.

Media	Half-life (specify units)
Groundwater	UK
Atmosphere	UK
Surface water	UK
Soil	UK

b. Identify the listed substance's known transformation products that have a half-life greater than 24 hours.

CAS No.	Name	Half-life (specify units)		Media
UK	UK	UK	in	UK
			in	
			in	
			in	

5.03 Specify the octanol-water partition coefficient, K_{ow} ... _____ UK _____ at 25°C

Method of calculation or determination .... _____ UK

5.04 Specify the soil-water partition coefficient, K_d .... _____ UK _____ at 25°C

Soil type .... _____ UK

5.05 Specify the organic carbon-water partition coefficient, K_{oc} .... _____ UK _____ at 25°C

5.06 Specify the Henry's Law Constant, H .... _____ UK _____ atm-m^3/mole

[__] Mark (X) this box if you attach a continuation sheet.

5.07 List the bioconcentration factor (BCF) of the listed substance, the species for which it was determined, and the type of test used in deriving the BCF.

Bioconcentration Factor	Species	Test[1]
UK	UK	UK

----

[1]Use the following codes to designate the type of test:

F = Flowthrough
S = Static

[ ] Mark (X) this box if you attach a continuation sheet.

SECTION 6 ECONOMIC AND FINANCIAL INFORMATION

6.01 Company Type -- Circle the number which most appropriately describes your company.

CBI   N/A

[ ]   Corporation 1

      Sole proprietorship 2

      Partnership 3

      Other (specify) _____ 4

6.02 At the end of the reporting year, were you constructing additional facilities at this
      site that were not yet in operation at the end of the reporting year, but which are
      now being used or will be used in the future for manufacturing, importing, or
      processing the listed substance? Circle the appropriate response.

CBI

[ ]   Yes ....N/A... 1

      No 2

6.03 List all of the product types that you manufacture that contain the listed substance
      as a raw material, and the percentage of the name-plate capacity dedicated to the
      listed substance that each product type represents. The total of all capacity
      percentiles should equal 100 percent. State the total name-plate capacity of the
CBI   process type(s) used to manufacture all product types that contain the listed
      substance.
[ ]

Product Type	% Total Capacity
N/A	

State the total name-plate capacity of the process type(s) used to manufacture all
product types that contain the listed substance: _____ kg/yr

[ ] Mark (X) this box if you attach a continuation sheet.

6.04   For each market listed below, state the quantity sold and the total sales value of
CBI   the listed substance sold or transferred in bulk during the reporting year.

[ ]

Market	Quantity Sold or Transferred (kg/yr)	Total Sales Value ($/yr)
Retail sales	N/A	N/A
Distribution -- Wholesalers		
Distribution -- Retailers		
Intra-company transfer		
Repackagers		
Mixture producers		
Article producers		
Other chemical manufacturers or processors		
Exporters		
Other (specify)		

6.05   Substitutes -- List all known commercially feasible substitutes that you know exist
        for the listed substance and state the cost of each substitute. A commercially
        feasible substitute is one which is economically and technologically feasible to use
CBI   in your current operation, and which results in a final product with comparable
        performance in its end uses.
[ ]

Substitute	Cost ($/kg)
UK	N/A

[ ] Mark (X) this box if you attach a continuation sheet.

6.06　State your average total and variable costs of manufacturing, importing, and
CBI　processing the listed substance during the reporting year. (For an explanation of
＿　these costs, refer to the instructions.)
[＿]
　　Average Total Costs

　　Manufacturing ....N/A................... _____ $/kg

　　Importing .... _____ $/kg

　　Processing .... _____ $/kg

　　Average Variable Costs　　　N/A

　　Manufacturing .... _____ $/kg

　　Importing .... _____ $/kg

　　Processing .... _____ $/kg

6.07　State your average purchase price of the listed substance, if purchased as a raw
　　material during the reporting year.

CBI　　　N/A
＿
[＿]　Average purchase price .... _____ $/kg

---

6.08　State your company's total sales and sales of the listed substance sold in bulk for
CBI　the reporting year.
＿　　　N/A
[＿]
　　Year ending .... [＿]＿] [＿]＿]
　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　Mo.　　Year

　　Company's total sales ($) ......N/A............................ _____

　　Sales of listed substance ($) .... _____

[＿]　Mark (X) this box if you attach a continuation sheet.

6.09 State your company's total sales and sales of the listed substance sold in bulk for
CBI   the corporate fiscal year preceding the reporting year. (Refer to the instructions
      for question 6.08 for the methodology used to answer this question.)
[_]   N/A

      Year ending .... [_]_] [_]_]
                                                                                 Mo.   Year

      Company's total sales ($) .... _____

      Sales of listed substance ($) .... _____

6.10 State your company's total sales and sales of the listed substance sold in bulk for
      the 2 corporate fiscal years preceding the reporting year in descending order.
CBI   (Refer to the instructions for question 6.08 for the methodology used to answer this
      question.)
[_]   N/A

      Year ending .... [_]_] [_]_]
                                                                                 Mo.   Year

      Company's total sales ($) .... _____

      Sales of listed substance ($) .... _____

      Year ending .... [_]_] [_]_]
                                                                                 Mo.   Year

      Company's total sales ($) .... _____

      Sales of listed substance ($) .... _____

[_] Mark (X) this box if you attach a continuation sheet.

General Instructions:

For questions 7.04-7.06, provide a separate response for each process block flow diagram provided in questions 7.01, 7.02, and 7.03. Identify the process type from which the information is extracted.

PART A MANUFACTURING AND PROCESSING PROCESS TYPE DESCRIPTION

7.01 In accordance with the instructions, provide a process block flow diagram showing the major (greatest volume) process type involving the listed substance.

CBI

[‾] Process type .... Modified Poly Glycol Reaction

7a Polyoxyalkylated Resin

7b Acetic Acid

7c TDI

7d Heavy Aromatic Solvent

7e IPA

7f Polyoxyalkylated Resin

7(2)

Reactor

7i Weighing & Transfer

7g Vent (Fugitive Steam)

7h Finished Product Packaging

MODIFIED POLYGLYCOL

7i Reactor Cleanout
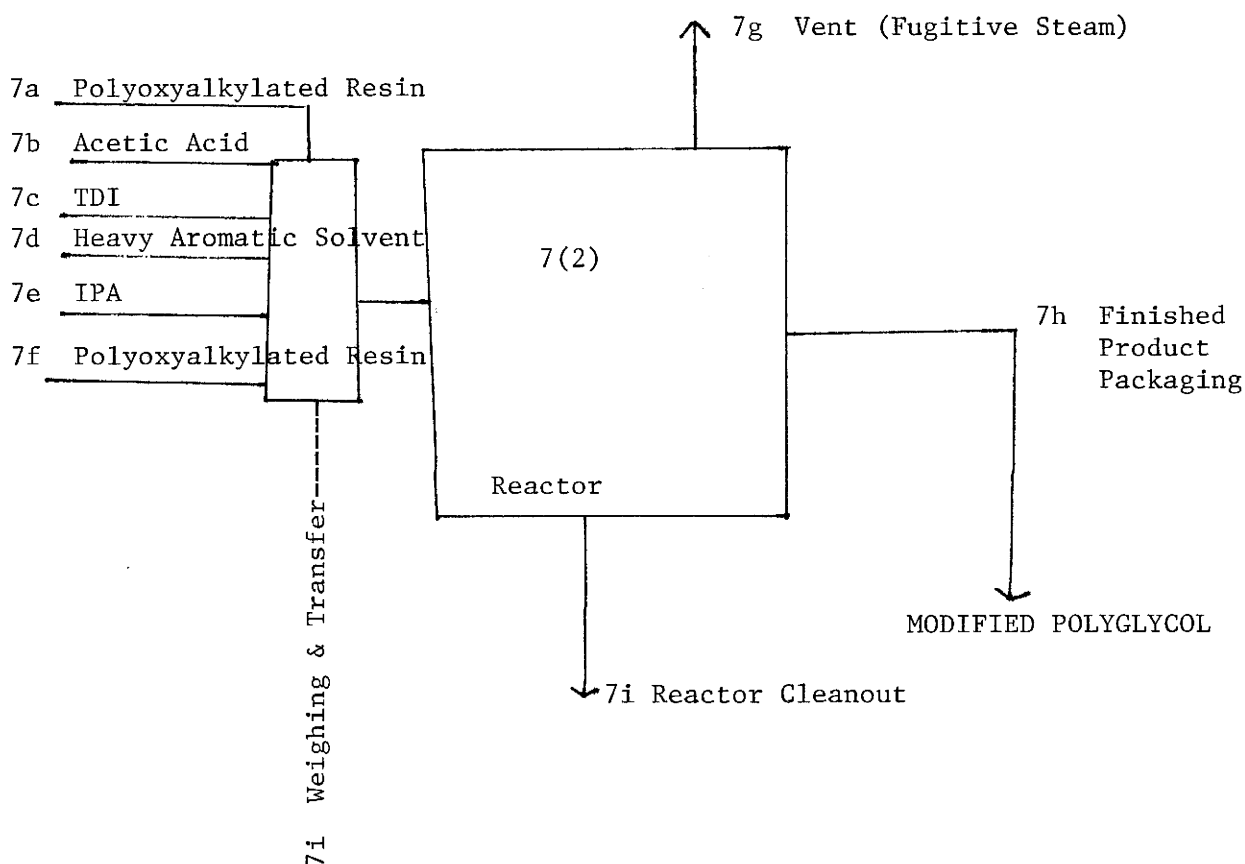
[‾] Mark (X) this box if you attach a continuation sheet.

7.02 In accordance with the instructions, provide a separate process block flow diagram showing each of the three major (greatest volume) process types involving the listed substance.

CBI

[ ] Process type .... N/A _____

[ ] Mark (X) this box if you attach a continuation sheet.

7.03 In accordance with the instructions, provide a process block flow diagram showing all process emission streams and emission points that contain the listed substance and which, if combined, would total at least 90 percent of all facility emissions if not treated before emission into the environment. If all such emissions are released from one process type, provide a process block flow diagram using the instructions for question 7.01. If all such emissions are released from more than one process type, provide a process block flow diagram showing each process type as a separate block.

CBI

[ ] Process type ....   Modified Polyglycol Reaction

7g Vent (Fugitive Steam)

7a Polyoxyalkylated Resin

7b Acetic Acid

7c TDI

7d Heavy Aromatic Solvent

7e IPA   7(2)

7f Polyoxyalkylated Resin

7h Finished
    Product
    Packaging

7i Weighing & Transfer

Reactor

MODIFIED POLYGLYCOL

7i Reactor Cleanout
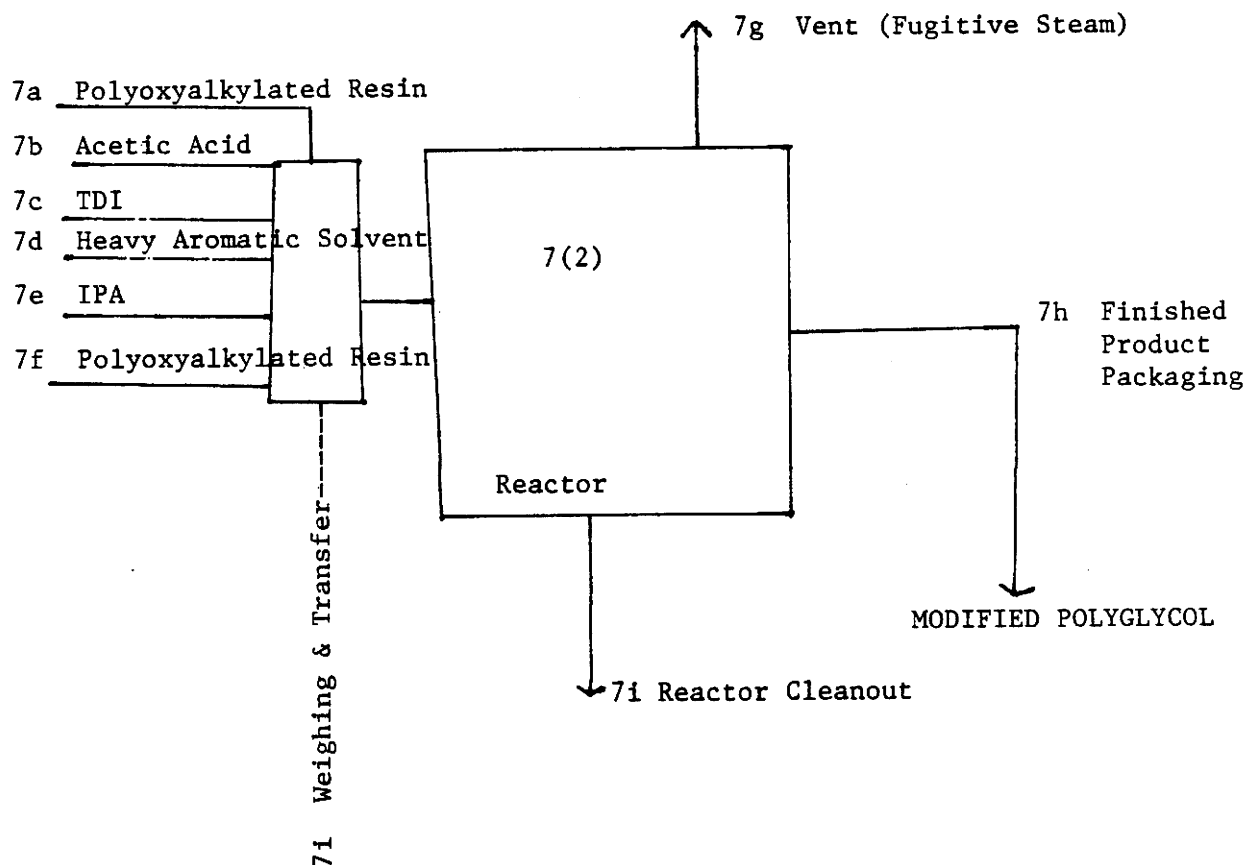
[ ] Mark (X) this box if you attach a continuation sheet.

7.04 Describe the typical equipment types for each unit operation identified in your
      process block flow diagram(s). If a process block flow diagram is provided for more
      than one process type, photocopy this question and complete it separately for each
      process type.

CBI

[ ] Process type .... __Modified Polyglycol Reaction__

Unit Operation ID Number	Typical Equipment Type	Operating Temperature Range (°C)	Operating Pressure Range (mm Hg)	Vessel Composition
7.1	Steel Drums	Ambient	Atmospheric	Steel
7.2	Reaction Vessel	80-110	45	Stainless Steel

[ ] Mark (X) this box if you attach a continuation sheet.

7.05 Describe each process stream identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type.

<u>CBI</u>

[☐] Process type ....   <u>Modified Polyglycol Reaction</u>

Process Stream ID Code	Process Stream Description	Physical State[1]	Stream Flow (kg/yr)
7(a)	Polyoxyalkylated Resin I	OL	19,762
(b)	Acetic Acid Glacial	AL	197
(c)	TDI	OL	400
(d)	Heavy Aromatic Solvent	OL	29,194
(e)	Isopropyl Alcohol	AL	2,487
(f)	Polyoxyalkylated Resin II	OL	5,930
(g)	Fugitive Gas	GO	UK
(h)	Modified Polyglycol	OL	57,971
(i)	Reactor Cleanout	IL	10,014

[1]Use the following codes to designate the physical state for each process stream:

GC = Gas (condensible at ambient temperature and pressure)
GU = Gas (uncondensible at ambient temperature and pressure)
SO = Solid
SY = Sludge or slurry
AL = Aqueous liquid
OL = Organic liquid
IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

98% Water - 2% Organic

[☐] Mark (X) this box if you attach a continuation sheet.

7.06 Characterize each process stream identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type. (Refer to the

CBI   instructions for further explanation and an example.)

[ ] Process type ....   Modified Polyglycol Reaction

a.	b.	c.	d.	e.
Process Stream ID Code	Known Compounds[1]	Concentrations[2,3] (% or ppm)	Other Expected Compounds	Estimated Concentrations (% or ppm)
7(a)	Polyoxyalkylated Resin I	100 (e)	N/A	N/A
(b)	Acetic Acid Glacial	100 (e)	N/A	N/A
(c)	TDI	99.7	N/A	<0.3
(d)	Heavy Aromatic Solvent	100	N/A	N/A
(e)	Isopropyl Alcohol	99	Water	1.0
(f)	Polyoxyalkylated Resin II	100	N/A	N/A
(g)	Air	99	TDI	Trace
	Organics	1	N/A	N/A
(h)	Modified Polyglycol	100	N/A	N/A
(i)	Water	98	N/A	N/A
	Modified Polyglycol	2	N/A	N/A

7.06   continued below

[ ] Mark (X) this box if you attach a continuation sheet.

7.06 (continued)

[1]For each additive package introduced into a process stream, specify the compounds that are present in each additive package, and the concentration of each component. Assign an additive package number to each additive package and list this number in column b. (Refer to the instructions for further explanation and an example. Refer to the glossary for the definition of additive package.)

Additive Package Number	Components of Additive Package	Concentrations (% or ppm)
1	N/A	N/A
2		
3		
4		
5		

[2]Use the following codes to designate how the concentration was determined:

A = Analytical result
E = Engineering judgement/calculation

[3]Use the following codes to designate how the concentration was measured:

V = Volume
W = Weight

[__] Mark (X) this box if you attach a continuation sheet.

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SECTION 8 RESIDUAL TREATMENT GENERATION, CHARACTERIZATION, TRANSPORTATION, AND MANAGEMENT

General Instructions:

For questions 8.04-8.06, provide a separate response for each residual treatment block flow diagram provided in question 8.01, 8.02 or 8.03. Identify the process type from which the information is extracted.

For questions 8.05-8.33, the Stream Identification Codes are those process streams listed in either the Section 7 or Section 8 block flow diagrams which contain residuals for each applicable waste management method.

For questions 8.07-8.33, if residuals are combined before they are handled, list those Stream Identification Codes on the same line.

Questions 8.09-8.33 refer to the waste management activities involving the residuals identified in either the Section 7 or Section 8 block flow diagrams. Not all Stream Identification Codes used in the sample answers (e.g., for the incinerator questions) have corresponding process streams identified in the block flow diagram(s). These Stream Identification codes are for illustrative purposes only.

For questions 8.11-8.33, if you have provided the information requested on one of the EPA Office of Solid Waste surveys listed below within the three years prior to your reporting year, you may submit a copy or reasonable facsimile in lieu of answering those questions which the survey addresses. The applicable surveys are: (1) Hazardous Waste Treatment, Storage, Disposal, and Recycling Survey; (2) Hazardous Waste Generator Survey; or (3) Subtitle D Industrial Facility Mail Survey.

[_] Mark (X) this box if you attach a continuation sheet.

8.01 In accordance with the instructions, provide a residual treatment block flow diagram
which describes the treatment process used for residuals identified in question 7.01.
CBI

[ ] Process type .... Modified Polyglycol Reaction
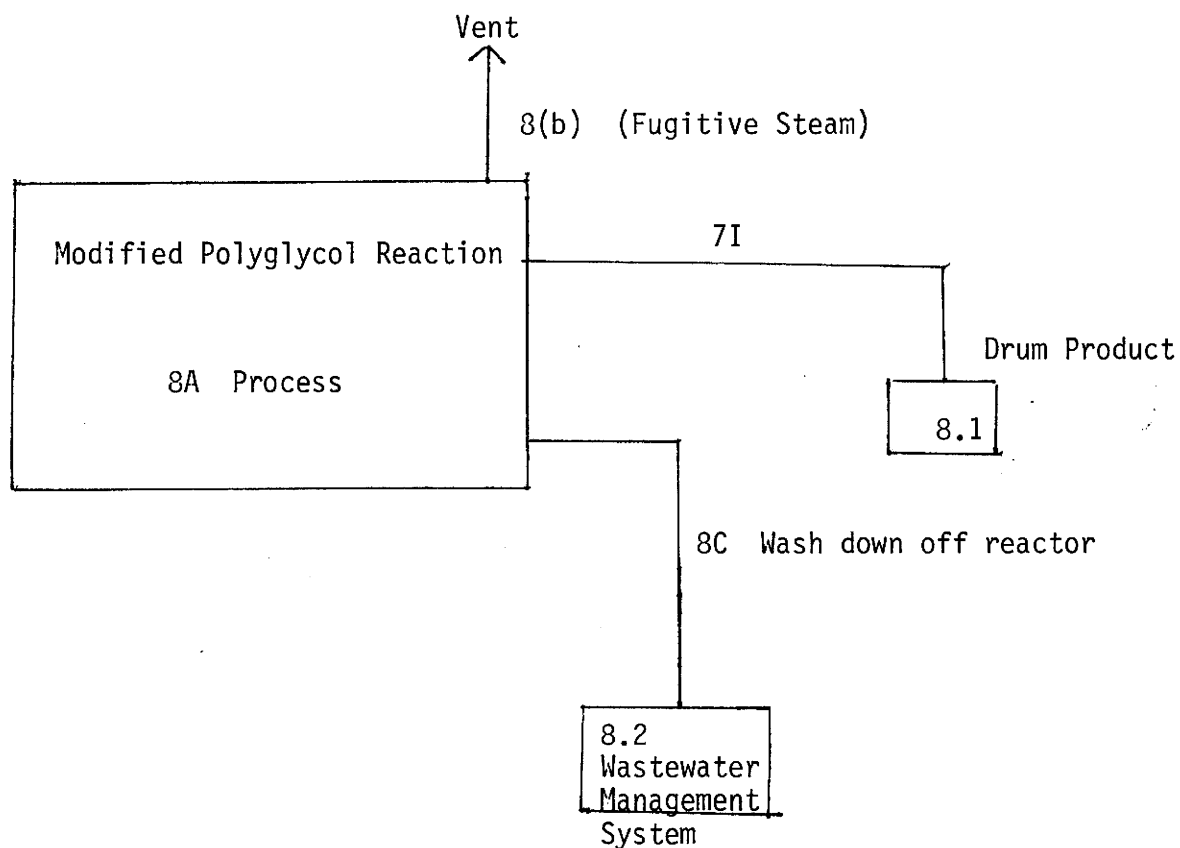
[ ] Mark (X) this box if you attach a continuation sheet.

8.02 In accordance with the instructions, provide residual treatment block flow diagram(s) which describe each of the treatment processes used for residuals identified in question 7.02.

CBI

[☐] Process type .... _____

N/A

[☐] Mark (X) this box if you attach a continuation sheet.

8.03 In accordance with the instructions, provide residual treatment block flow diagram(s) which describe each of the treatment processes used for residuals identified in question 7.03.

CBI

[ ] Process type .... _____

N/A

[ ] Mark (X) this box if you attach a continuation sheet.

8.04 Describe the typical equipment types for each unit operation identified in your residual treatment block flow diagram(s). If a residual treatment block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type.

<u>CBI</u>

[__] Process type .... _____

Unit Operation ID Number (as assigned in questions 8.01, 8.02, or 8.03)	Typical Equipment Type
N/A	N/A

[__] Mark (X) this box if you attach a continuation sheet.

PART B RESIDUAL GENERATION AND CHARACTERIZATION

8.05 Characterize each process stream identified in your residual treatment block flow diagram(s). If a residual treatment block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process

CBI type. (Refer to the instructions for further explanation and an example.)

[ ] Process type ....   Modified Polyglycol Reaction

a. Stream ID Code	b. Type of Hazardous Waste[1]	c. Physical State of Residual[2]	d. Known Compounds[3]	e. Concentra- tions (% or ppm)[4,5,6]	f. Other Expected Compounds	g. Estimated Concen- trations (% or ppm)
8B	T	GU	Air	>99%	None	N/A
			Aromatic	<1%		
8C	T	IL	Modified Polyglycol	2 (e)(11)	None	N/A
			Water	98 (e)(1)		

8.05 continued below

[ ] Mark (X) this box if you attach a continuation sheet.

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8.05 (continued)

[1]Use the following codes to designate the type of hazardous waste:

I = Ignitable
C = Corrosive
R = Reactive
E = EP toxic
T = Toxic
H = Acutely hazardous

[2]Use the following codes to designate the physical state of the residual:

GC = Gas (condensible at ambient temperature and pressure)
GU = Gas (uncondensible at ambient temperature and pressure)
SO = Solid
SY = Sludge or slurry
AL = Aqueous liquid
OL = Organic liquid
IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

8.05 continued below

[ ] Mark (X) this box if you attach a continuation sheet.

8.05 (continued)

[3]For each additive package introduced into a process stream, specify the compounds
that are present in each additive package, and the concentration of each component.
Assign an additive package number to each additive package and list this number in
column d. (Refer to the instructions for further explanation and an example.
Refer to the glossary for the definition of additive package.)

Additive Package Number	Components of Additive Package	Concentrations (% or ppm)
1	N/A	N/A
2		
3		
4		
5		

[4]Use the following codes to designate how the concentration was determined:

A = Analytical result
E = Engineering judgement/calculation

8.05 continued below

[ ] Mark (X) this box if you attach a continuation sheet.

8.05 (continued)

[5]Use the following codes to designate how the concentration was measured:

V = Volume
W = Weight

[6]Specify the analytical test methods used and their detection limits in the table below. Assign a code to each test method used and list those codes in column e.

Code	Method	Detection Limit (± ug/l)
1	Volume and Observation	± 5%
2		
3		
4		
5		
6		

[ ] Mark (X) this box if you attach a continuation sheet.

8.06 Characterize each process stream identified in your residual treatment block flow diagram(s). If a residual treatment block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type. (Refer to the instructions for further explanation and an example.)

CBI

[ ] Process type .... _____

a. Stream ID Code	b. Waste Description Code[1]	c. Management Method Code[2]	d. Residual Quantities (kg/yr)	e. Management of Residual (%)		f. Costs for Off-Site Management (per kg)	g. Changes in Management Methods
				On-Site	Off-Site		
9B	B91	M5a	UK	100	N/A	N/A	N/A
8C	A05	2D	10,014	98	2	0.60	None

---

[1]Use the codes provided in Exhibit 8-1 to designate the waste descriptions

[2]Use the codes provided in Exhibit 8-2 to designate the management methods

---

[ ] Mark (X) this box if you attach a continuation sheet.

EXHIBIT 8-1.
(Refers to question 8.06(b))

WASTE DESCRIPTION CODES

These waste description codes were developed specifically for this survey to supplement the descriptions listed with the RCRA and other waste codes. (These waste description codes are not regulatory definitions.)

WASTE DESCRIPTION CODES FOR HAZARDOUS WASTE DESCRIBED BY A SINGLE RCRA F, K, P, OR U WASTE CODE

A01 Spent solvent (F001-F005, K086)
A02 Other organic liquid (F001-F005, K086)
A03 Still bottom (F001-F005, K086)
A04 Other organic sludge (F001-F005, K086)
A05 Wastewater or aqueous mixture

A06 Contaminated soil or cleanup residue
A07 Other F or K waste, exactly as described*
A08 Concentrated off-spec or discarded product
A09 Empty containers

A10 Incinerator ash
A11 Solidified treatment residue
A12 Other treatment residue (specify in "Facility Notes")
A13 Other untreated waste (specify in "Facility Notes")

*"Exactly as described" means that the waste matches the description of the RCRA waste code.

INORGANIC LIQUIDS—Waste that is primarily inorganic and highly fluid (e.g., aqueous), with low suspended inorganic solids and low organic content.

B01 Aqueous waste with low solvents
B02 Aqueous waste with low other toxic organics
B03 Spent acid with metals
B04 Spent acid without metals
B05 Acidic aqueous waste
B06 Caustic solution with metals but no cyanides
B07 Caustic solution with metals and cyanides
B08 Caustic solution with cyanides but no metals
B09 Spent caustic
B10 Caustic aqueous waste
B11 Aqueous waste with reactive sulfides
B12 Aqueous waste with other reactives (e.g., explosives)
B13 Other aqueous waste with high dissolved solids
B14 Other aqueous waste with low dissolved solids
B15 Scrubber water
B16 Leachate
B17 Waste liquid mercury
B18 Other inorganic liquid (specify in "Facility Notes")

INORGANIC SLUDGES—Waste that is primarily inorganic, with moderate-to-high water content and low organic content; pumpable.

B19 Lime sludge without metals
B20 Lime sludge with metals/metal hydroxide sludge
B21 Wastewater treatment sludge with toxic organics
B22 Other wastewater treatment sludge
B23 Untreated plating sludge without cyanides
B24 Untreated plating sludge with cyanides
B25 Other sludge with cyanides
B26 Sludge with reactive sulfides
B27 Sludge with other reactives
B28 Degreasing sludge with metal scale or filings
B29 Air pollution control device sludge (e.g., fly ash, wet scrubber sludge)
B30 Sediment or lagoon dragout contaminated with organics
B31 Sediment or lagoon dragout contaminated with inorganics only

B32 Drilling mud
B33 Asbestos slurry or sludge
B34 Chloride or other brine sludge
B35 Other inorganic sludge (specify in "Facility Notes")

INORGANIC SOLIDS—Waste that is primarily inorganic and solid, with low organic content and low-to-moderate water content; not pumpable.

B36 Soil contaminated with organics
B37 Soil contaminated with inorganics only
B38 Ash, slag, or other residue from incineration of wastes
B39 Other "dry" ash, slag, or thermal residue
B40 "Dry" lime or metal hydroxide solids chemically "fixed"
B41 "Dry" lime or metal hydroxide solids not "fixed"
B42 Metal scale, filings, or scrap
B43 Empty or crushed metal drums or containers
B44 Batteries or battery parts, casings, cores
B45 Spent solid filters or adsorbents
B46 Asbestos solids and debris
B47 Metal-cyanide salts/chemicals
B48 Reactive cyanide salts/chemicals
B49 Reactive sulfide salts/chemicals
B50 Other reactive salts/chemicals
B51 Other metal salts/chemicals
B52 Other waste inorganic chemicals
B53 Lab packs of old chemicals only
B54 Lab packs of debris only
B55 Mixed lab packs
B56 Other inorganic solids (specify in "Facility Notes")

INORGANIC GASES—Waste that is primarily inorganic with a low organic content and is a gas at atmospheric pressure.

B57 Inorganic gases

ORGANIC LIQUIDS—Waste that is primarily organic and is highly fluid, with low inorganic solids content and low-to-moderate water content.

B58 Concentrated solvent-water solution
B59 Halogenated (e.g., chlorinated) solvent
B60 Nonhalogenated solvent

B61 Halogenated/nonhalogenated solvent mixture
B62 Oil-water emulsion or mixture
B63 Waste oil
B64 Concentrated aqueous solution of other organics
B65 Concentrated phenolics
B66 Organic paint, ink, lacquer, or varnish
B67 Adhesives or epoxies
B68 Paint thinner or petroleum distillates
B69 Reactive or polymerizable organic liquid
B70 Other organic liquid (specify in "Facility Notes")

ORGANIC SLUDGES—Waste that is primarily organic, with low-to-moderate inorganic solids content and water content; pumpable.

B71 Still bottoms of halogenated (e.g., chlorinated) solvents or other organic liquids
B72 Still bottoms of nonhalogenated solvents or other organic liquids
B73 Oily sludge
B74 Organic paint or ink sludge
B75 Reactive or polymerizable organics
B76 Resins, tars, or tarry sludge
B77 Biological treatment sludge
B78 Sewage or other untreated biological sludge
B79 Other organic sludge (specify in "Facility Notes")

ORGANIC SOLIDS—Waste that is primarily organic and solid, with low-to-moderate inorganic content and water content; not pumpable.

B80 Halogenated pesticide solid
B81 Nonhalogenated pesticide solid
B82 Solid resins or polymerized organics
B83 Spent carbon
B84 Reactive organic solid
B85 Empty fiber or plastic containers
B86 Lab packs of old chemicals only
B87 Lab packs of debris only
B88 Mixed lab packs
B89 Other halogenated organic solid
B90 Other nonhalogenated organic solid

ORGANIC GASES—Waste that is primarily organic with low-to-moderate inorganic content and is a gas at atmospheric pressure.

B91 Organic gases

EXHIBIT 8-2.
(Refers to question 8.06(c))

MANAGEMENT METHODS

M1 = Discharge to publicly owned wastewater treatment works
M2 = Discharge to surface water under NPDES
M3 = Discharge to off-site, privately owned wastewater treatment works
M4 = Scrubber: a) caustic; b) water; c) other
M5 = Vent to: a) atmosphere; b) flare; c) other (specify)_____
M6 = Other (specify)_____

TREATMENT AND RECYCLING

Incineration/thermal treatment
1I   Liquid injection
2I   Rotary or rocking kiln
3I   Rotary kiln with a liquid injection unit
4I   Two stage
5I   Fixed hearth
6I   Multiple hearth
7I   Fluidized bed
8I   Infrared
9I   Fume/vapor
10I Pyrolytic destructor
11I Other incineration/thermal treatment

Reuse as fuel
1RF   Cement kiln
2RF   Aggregate kiln
3RF   Asphalt kiln
4RF   Other kiln
5RF   Blast furnace
6RF   Sulfur recovery furnace
7RF   Smelting, melting, or refining furnace
8RF   Coke oven
9RF   Other industrial furnace
10RF Industrial boiler
11RF Utility boiler
12RF Process heater
13RF Other reuse as fuel unit

Fuel Blending
1FB   Fuel blending

Solidification
1S   Cement or cement/silicate processes
2S   Pozzolanic processes
3S   Asphaltic processes
4S   Thermoplastic techniques
5S   Organic polymer techniques
6S   Jacketing (macro-encapsulation)
7S   Other solidification

Recovery of solvents and liquid organics for reuse
1SR   Fractionation
2SR   Batch still distillation
3SR   Solvent extraction
4SR   Thin-film evaporation
5SR   Filtration
6SR   Phase separation
7SR   Dessication
8SR   Other solvent recovery

Recovery of metals
1MR   Activated carbon (for metals recovery)
2MR   Electrodialysis (for metals recovery)
3MR   Electrolytic metal recovery
4MR   Ion exchange (for metals recovery)
5MR   Reverse osmosis (for metals recovery)
6MR   Solvent extraction (for metals recovery)
7MR   Ultrafiltration (for metals recovery)
8MR   Other metals recovery

Wastewater Treatment
After each wastewater treatment type listed below (1WT - 66WT) specify a) tank; or b) surface impoundment (i.e., 63WTa)

Equalization
1WT   Equalization

Cyanide oxidation
2WT   Alkaline chlorination
3WT   Ozone
4WT   Electrochemical
5WT   Other cyanide oxidation

General oxidation (including disinfection)
6WT   Chlorination
7WT   Ozonation
8WT   UV radiation
9WT   Other general oxidation

Chemical precipitation[1]
10WT Lime
11WT Sodium hydroxide
12WT Soda ash
13WT Sulfide
14WT Other chemical precipitation

Chromium reduction
15WT Sodium bisulfite
16WT Sulfur dioxide

EXHIBIT 8-2. (continued)

MANAGEMENT METHODS

17WT Ferrous sulfate
18WT Other chromium reduction

Complexed metals treatment (other than
chemical precipitation by pH adjustment)
19WT Complexed metals treatment

Emulsion breaking
20WT Thermal
21WT Chemical
22WT Other emulsion breaking

Adsorption
23WT Carbon adsorption
24WT Ion exchange
25WT Resin adsorption
26WT Other adsorption

Stripping
27WT Air stripping
28WT Steam stripping
29WT Other stripping

Evaporation
30WT Thermal
31WT Solar
32WT Vapor recompression
33WT Other evaporation

Filtration
34WT Diatomaceous earth
35WT Sand
36WT Multimedia
37WT Other filtration

Sludge dewatering
38WT Gravity thickening
39WT Vacuum filtration
40WT Pressure filtration (belt, plate
    and frame, or leaf)
41WT Centrifuge .
42WT Other sludge dewatering

Air flotation
43WT Dissolved air flotation
44WT Partial aeration
45WT Air dispersion
46WT Other air flotation

Oil skimming
47WT Gravity separation

48WT Coalescing plate separation
49WT Other oil skimming

Other liquid phase separation
50WT Decanting
51WT Other liquid phase separation

Biological treatment
52WT Activated sludge
53WT Fixed film-trickling filter
54WT Fixed film-rotating contactor
55WT Lagoon or basin, aerated
56WT Lagoon, facultative
57WT Anaerobic
58WT Other biological treatment

Other wastewater treatment
59WT Wet air oxidation
60WT Neutralization
61WT Nitrification
62WT Denitrification
63WT Flocculation and/or coagulation
64WT Settling (clarification)
65WT Reverse osmosis
66WT Other wastewater treatment

OTHER WASTE TREATMENT

1TR Other treatment
2TR Other recovery for reuse

ACCUMULATION

1A   Containers
2A   Tanks

STORAGE

1ST Container (i.e., barrel, drum)
2ST Tank
3ST Waste pile
4ST Surface impoundment
5ST Other storage

DISPOSAL

1D   Landfill
2D   Land treatment
3D   Surface impoundment (to be closed
     as a landfill)
4D   Underground injection well

---

[1]Chemical precipitation is a treatment operation whereby the pH of a waste is
adjusted to the range necessary for removal (precipitation) of contaminants.
However, if the pH is adjusted solely to achieve a neutral pH, THE OPERATION SHOULD
BE CONSIDERED NEUTRALIZATION (60WT).

8.07 Identify any special handling instructions for the residuals identified in your
CBI   process block or residual treatment block flow diagram(s). (Refer to the
      instructions for an example.)
[_]

Stream ID Code	Special Handling Instructions
_____	N/A _____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

8.08 Identify those construction materials that are recommended (compatible) for
      containing or transporting the listed substance, and those materials that you know
CBI   could cause a dangerous reaction or significant corrosion (incompatible) if they are
      used to contain or transport the listed substance.
[_]

Stream ID Code	Construction Materials	
	Compatible Containment Materials	Incompatible Containment Materials
_____	N/A _____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

[_] Mark (X) this box if you attach a continuation sheet.

8.09 Identify each off-site facility (including POTWs) that manages the residuals
identified in your process block or residual treatment block flow diagram(s), and the
CBI   quantity that each managed during the reporting year.   Photocopy this question and
       complete it separately for each off-site facility.

[⎯]

Stream ID Code	Annual Quantity (kg)
N/A	N/A

Facility Name   [⎯]

Address   [⎯]
                                                 Street

          [⎯]
                                                  City

                                          [⎯][⎯]   [⎯][⎯][⎯][⎯][⎯]--[⎯][⎯][⎯][⎯]
                                          State   Zip Code

EPA Identification Number (i.e.,
Hazardous Waste Facility ID Number) .... [⎯][⎯][⎯][⎯][⎯][⎯][⎯][⎯][⎯][⎯][⎯][⎯]

[⎯] Mark (X) this box if you attach a continuation sheet.

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PART D ON-SITE RESIDUALS MANAGEMENT INFORMATION

8.10 Identification Permit Numbers -- List any applicable identification or permit numbers
      for your facility.

      EPA National Pollutant Discharge Elimination System
      (NPDES) Permit No.(s) .... _____N/A_____
      (discharges to surface water)

                                                                     _____

                                                                     _____

      EPA Underground Injection Well
      (UIC) Permit No.(s) .... _____N/A_____
      (underground injection of fluids)

                                                                     _____

                                                                     _____

      EPA Point Source Discharge
      (PSD) Permit No.(s) .... _____N/A_____
      (air emissions from point sources)

                                                                     _____

                                                                     _____

      EPA Hazardous Waste Management
      Facility Permit No.(s) .... _____N/A_____

                                                                     _____

                                                                     _____

      Other EPA Permits (specify)

                                                                     _____N/A_____
      _____ .... _____

      _____ .... _____

      _____ .... _____

[_] Mark (X) this box if you attach a continuation sheet.

8.11 On-Site Storage or Treatment in Piles -- Complete this table for the five largest (by volume) piles that are used on-site to store or treat the residuals identified in your process block or residual treatment block flow diagram(s).

CBI

[ ]

Pile	Quantity Managed per Year (cubic meters)	Under Roofed Structure (Y/N)	Type of Containment Provided[1]	Synthetic Liner Base (Y/N)[2]	Frequency of Transfer and/or Handling Operations[3]	Stream ID Code
1	N/A	N/A	N/A	N/A	N/A	N/A
2						
3						
4						
5						

Indicate if Office of Solid Waste survey has been submitted in lieu of response by circling the appropriate response.

Yes 1

No 2

----

[1]Use the following codes to designate the type of containment provided:

C = Complete (includes both dike containment and underground (leachate) containment)
P1 = Partial-1 (includes just dike containment)
P2 = Partial-2 (includes just underground (leachate) containment)
N = None

[2]Waste may lie directly on the synthetic liner or the liner may be covered with a clay layer

[3]Use the following codes to designate frequency of transfer and/or handling operations:

A = Daily
B = Weekly
C = Monthly
D = Other (specify) _____

[ ] Mark (X) this box if you attach a continuation sheet.

8.12 On-Site Storage or Treatment in Tanks -- Complete the following table for the five largest (by volume) tanks that are used on-site to store or treat the residuals identified in your process block or residual
CBI treatment block flow diagram(s).

[‾]

Tank	Design Capacity (liters)	Quantity per Year (liters)	Treat-ment Types[1]	Average Length of Storage (days)	Part of Wastewater Treatment Train (Y/N)[2]	Tank Covered (Y/N)	Type of Containment Provided[3]	Stream ID Code
1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2								
3								
4								
5								

Indicate if Office of Solid Waste survey has been submitted in lieu of response by circling the appropriate response.

Yes 1

No 2

----

[1]Indicate "S" for storage or use the codes provided in Exhibit 8-3 (which follows question 8.13) to designate treatment types

[2]Treatment train from which wastewater is discharged under a NPDES permit or through a sewer system to a publicly owned treatment works

[3]Use the following codes to designate the type of containment provided:

C = Complete (includes both dike containment and underground (leachate) containment)
P1 = Partial-1 (includes just dike containment)
P2 = Partial-2 (includes just underground (leachate) containment)
N = None

[‾] Mark (X) this box if you attach a continuation sheet.

66

8.13   On-Site Storage, Treatment, or Disposal in Containers -- Complete the following table for the five largest
       (by volume) types of free standing containers that are used on-site to store, treat, or dispose of the
CBI   residuals identified in your process block or residual treatment block flow diagram(s).

[__]

Container	Design Capacity (liters)	Quantity Stored per Year (liters)	Treat-ment Types[1]	Average Length of Storage (days)	Average Daily Stored Quantity (liters)	Maximum Operational Storage Capacity (liters)	Storage Base Material[2]	Stream ID Code
1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2								
3								
4								
5								

Indicate if Office of Solid Waste survey has been submitted in lieu of response
by circling the appropriate response.

Yes 1

No 2

---

[1]Indicate "S" for storage and use the codes provided in Exhibit 8-3 to designate treatment types

If residual is stored, indicate (Y/N) in parenthesis whether the storage area is designed and operated to
collect and contain surface runoff

[2]Use the following codes to designate storage base materials:

A = Concrete
B = Asphalt
C = Soil
D = Other (specify) _____

[__]   Mark (X) this box if you attach a continuation sheet.

EXHIBIT 8-3
[REFERS TO QUESTIONS 8.12, 8.13, AND 8.29]

WASTEWATER TREATMENT TYPES

WASTEWATER TREATMENT

Equalization
1WT Equalization

Cyanide oxidation
2WT Alkaline chlorination
3WT Ozone
4WT Electrochemical
5WT Other cyanide oxidation

General oxidation (including disinfection)
6WT Chlorination
7WT Ozonation
8WT UV Radiation
9WT Other general oxidation

Chemical Precipitation[1]
10WT Lime
11WT Sodium hydroxide
12WT Soda ash
13WT Sulfide
14WT Other chemical precipitation

Chromium reduction
15WT Sodium bisulfite
16WT Sulfur dioxide
17WT Ferrous sulfate
18WT Other chromium reduction

Complexed metals treatment (other than chemical precipitation by pH adjustment)
19WT Complexed metals treatment

Emulsion breaking
20WT Thermal
21WT Chemical
22WT Other emulsion breaking

Adsorption
23WT Carbon adsorption
24WT Ion exchange
25WT Resin adsorption
26WT Other adsorption

Stripping
27WT Air stripping
28WT Steam stripping
29WT Other stripping

Evaporation
30WT Thermal

31WT Solar
32WT Vapor recompression
33WT Other evaporation

Filtration
34WT Diatomaceous earth
35WT Sand
36WT Multimedia
37WT Other filtration

Sludge dewatering
38WT Gravity thickening
39WT Vacuum filtration
40WT Pressure filtration (belt, plate and frame, or leaf)
41WT Centrifuge
42WT Other sludge dewatering

Air flotation
43WT Dissolved air flotation
44WT Partial aeration
45WT Air dispersion
46WT Other air flotation

Oil skimming
47WT Gravity separation
48WT Coalescing plate separation
49WT Other oil skimming

Other liquid phase separation
50WT Decanting
51WT Other liquid phase separation

Biological treatment
52WT Activated sludge
53WT Fixed film--trickling filter
54WT Fixed film--rotating contactor
55WT Lagoon or basin, aerated
56WT Lagoon, facultative
57WT Anaerobic
58WT Other biological treatment

Other wastewater treatment
59WT Wet air oxidation
60WT Neutralization
61WT Nitrification
62WT Denitrification
63WT Flocculation and/or coagulation
64WT Settling (clarification)
65WT Reverse osmosis
66WT Other wastewater treatment

---

[1]Chemical precipitation is a treatment operation whereby the pH of a waste is adjusted to the range necessary for removal (precipitation) of contaminants. However, if the pH is adjusted solely to achieve a neutral pH, THE OPERATION SHOULD BE CONSIDERED NEUTRALIZATION (60WT).

8.14 On-Site Burning in Boilers — Complete the following table for the five largest (by capacity) boilers that are used on-site to burn the residuals identified in your process block or residual treatment block flow diagram(s).

CBI

[ ]

Boiler	Boiler Type[1]	Average Boiler Load[2] (%)	Average Fuel Replacement Ratio[3] (%)	Stream ID Code
1	N/A	N/A	N/A	N/A
2				
3				
4				
5				

Indicate if Office of Solid Waste survey has been submitted in lieu of response by circling the appropriate response.

Yes 1

No 2

----

[1] Use the following codes to designate boiler type:

F = Fire tube
W = Water tube

[2] Designate the average boiler load when firing residual (percent of capacity)

[3] Designate the average fuel replacement ratio as a percentage (heat-input basis)

[ ] Mark (X) this box if you attach a continuation sheet.

8.15 Complete the following table for the five largest (by capacity) boilers that are used
on-site to burn the residuals identified in your process block or residual treatment
CBI block flow diagram(s).

[___]

Boiler	Boiler Heat Capacity (heat input in kJ/hr)	Primary Boiler Fuel[1]
1	N/A	N/A
2		
3		
4		
5		

Indicate if Office of Solid Waste survey has been submitted in lieu of response
by circling the appropriate response.

Yes 1

No 2

---

[1]Use the following codes to designate the primary boiler fuel:

A = Oil   D = Wood
B = Gas   E = Other (specify) _____
C = Coal

[___] Mark (X) this box if you attach a continuation sheet.

8.16 Provide the following information for the residuals identified in your process block or residual treatment block flow diagram(s) that are burned in on-site boilers. Photocopy this question and complete it separately for each boiler.

CBI

[ ] Boiler number .... N/A

Stream ID code(s) .... N/A

	Residual, as Fired (or residual mixture if residuals are blended)	Boiler Fuel, as Fired (residual(s) plus primary fuel)
Btu content (J/kg)		
Average	N/A	N/A
Minimum		
Total halogen content (% by wt.)		
Average		
Maximum		

Indicate if Office of Solid Waste survey has been submitted. in lieu of response by circling the appropriate response.

Yes 1

No 2

[ ] Mark (X) this box if you attach a continuation sheet.

8.17 Complete the following table for the five largest (by capacity) boilers that are used on-site to burn the residuals identified in your process block or residual treatment
CBI block flow diagram(s).

[＿]

| Boiler | Stream ID Code | Listed Metal[1] | Total Metal Content (% by weight) | |
			Avg.	Max.
1	N/A	N/A	N/A	N/A
2				
3				
4				
5				

Indicate if Office of Solid Waste survey has been submitted in lieu of response by circling the appropriate response.

Yes 1

No 2

----

[1] A listed metal is either an EP toxic metal or a metal that is included on the California List (as defined in section 3004(d)(2) of the Resource Conservation and Recovery Act)

[＿] Mark (X) this box if you attach a continuation sheet.

8.18 Complete the following table for the five largest (by capacity) boilers that are used on-site to burn the residuals identified in your process block or residual treatment
CBI   block flow diagram(s).

[_]

Boiler	Air Pollution Control Device[1]	Types of Emissions Data Available
1	N/A	N/A
2		
3		
4		
5		

Indicate if Office of Solid Waste survey has been submitted in lieu of response by circling the appropriate response.

Yes 1

No 2

----

[1]Use the following codes to designate the air pollution control device:

S = Scrubber (include type of scrubber in parenthesis)
E = Electrostatic precipitator
0 = Other (specify) _____

[_]   Mark (X) this box if you attach a continuation sheet.

8.19 Stack Parameters -- Provide the following information for each of the five largest (by capacity) boilers that are used on-site to burn the residuals identified in your process block or residual treatment block flow diagram(s). Photocopy this question CBI and complete it separately for each boiler.

[̄] Boiler number .... _____N/A_____

Stack height .... _____ m

Stack inner diameter (at outlet) .... _____ m

Exhaust temperature .... _____ °C

Vertical or horizontal stack .... _____ (V or H)

Annual emissions for the listed substance .... _____ kg/yr

Height of attached or adjacent building .... _____ m

Width of attached or adjacent building .... _____ m

Building cross-sectional area .... _____ m^2

Emission exit velocity .... _____ m/sec

Average emission rate of exit stream .... _____ kg/min

Maximum emission rate of exit stream .... _____ kg/min

Average duration of maximum emission rate of exit stream . _____ min

Frequency of maximum emission rate of exit stream .... _____ times/year

Indicate if Office of Solid Waste survey has been submitted in lieu of response by circling the appropriate response.

Yes 1

No 2

[̄] Mark (X) this box if you attach a continuation sheet.

8.20 On-Site Burning in Incinerators -- Complete the following table for the three largest
CBI (by capacity) incinerators that are used on-site to burn the residuals identified in
your process block or residual treatment block flow diagram(s).

[ ]

Incinerator	Incinerator Type[1]	Primary Incinerator Fuel[2]	Average Fuel Replacement Ratio[3]	Stream ID Code
1	N/A	N/A	N/A	N/A
2				
3				

Indicate if Office of Solid Waste survey has been submitted in lieu of response
by circling the appropriate response.

Yes 1

No 2

----

[1]Use the following codes to designate the incinerator type:

1I = Liquid injection   6I = Multiple hearth
2I = Rotary or rocking kiln   7I = Fluidized bed
3I = Rotary kiln with a liquid   8I = Infrared
     injection unit   9I = Fume/vapor
4I = Two stage   10I = Pyrolytic destructor
5I = Fixed hearth   11I = Other (specify) _____

[2]Use the following codes to designate the primary incinerator fuel:

A = Oil   D = Wood
B = Gas   E = Other (specify) _____
C = Coal

[3]Designate the percentage of auxiliary fuel used when firing residual (percent of
capacity)

[ ] Mark (X) this box if you attach a continuation sheet.

8.21   Complete the following table for the three largest (by capacity) incinerators that
       are used on-site to burn the residuals identified in your process block or residual
CBI   treatment block flow diagram(s).

[⎯]

Incinerator	Incinerator Heat Capacity (heat input in kJ/hr)	Feed Type[1]
1	N/A	N/A
2		
3		

Indicate if Office of Solid Waste survey has been submitted in lieu of response
by circling the appropriate response.

Yes 1

No 2

----

[1]Use the following codes to designate feed type:

A = Liquid nozzle type (specify) _____
B = Atomizing pressure (specify) _____
C = Solid-batch charge
D = Solid-continuous charge

[⎯]   Mark (X) this box if you attach a continuation sheet.

8.22 Describe the combustion chamber design parameters for each of the three largest (by capacity) incinerators that are used on-site to burn the residuals identified in your process block or residual treatment block flow diagram(s).

CBI

[‾]

Incinerator	Combustion Chamber Temperature (°C)		Location of Temperature Monitor		Residence Time In Combustion Chamber (seconds)	
	Primary	Secondary	Primary	Secondary	Primary	Secondary
1	N/A	N/A	N/A	N/A	N/A	N/A
2						
3						

Indicate if Office of Solid Waste survey has been submitted in lieu of response by circling the appropriate response.

Yes 1

No 2

8.23 Complete the following table for the three largest (by capacity) incinerators that are used on-site to burn the residuals identified in your process block or residual treatment block flow diagram(s).

CBI

[‾]

Incinerator	Air Pollution Control Device[1]	Types of Emissions Data Available
1	N/A	N/A·
2		
3		

Indicate if Office of Solid Waste survey has been submitted in lieu of response by circling the appropriate response.

Yes 1

No 2

---

[1]Use the following codes to designate the air pollution control device:

S = Scrubber (include type of scrubber in parenthesis)
E = Electrostatic precipitator
0 = Other (specify) _____

[‾] Mark (X) this box if you attach a continuation sheet.

8.24   Stack Parameters -- Provide the following information on stack parameters for the
       three largest (by capacity) incinerators that are used on-site to burn the residuals
       identified in your process block or residual treatment block flow diagram(s).
CBI   Photocopy this question and complete it separately for each incinerator.

[‾]   Incinerator number ....   N/A

       Stack height .... _____ m

       Stack inner diameter (at outlet) .... _____ m

       Exhaust temperature .... _____ °C

       Vertical or horizontal stack .... _____ (V or H)

       Annual emissions for the listed substance .... _____ kg/yr

       Height of attached or adjacent building .... _____ m

       Width of attached or adjacent building .... _____ m

       Building cross-sectional area .... _____ m^2

       Emission exit velocity .... _____ m/sec

       Average emission rate of exit stream .... _____ kg/min

       Maximum emission rate of exit stream .... _____ kg/min

       Average duration of maximum emission rate of exit stream . _____ min

       Frequency of maximum emission rate of exit stream .... _____ times/year

              Indicate if Office of Solid Waste survey has been submitted in lieu of response
              by circling the appropriate response.

              Yes 1

              No 2

[‾]   Mark (X) this box if you attach a continuation sheet.

8.25 Provide the following information on the incinerator feed for the three largest (by capacity) incinerators that are used on-site to burn the residuals identified in your process block or residual treatment block flow diagram(s). Photocopy this question and complete it separately for each incinerator.

CBI

[ ] Incinerator number .... ____N/A_____

Stream ID code(s) .... _____

	Residual, as Fired (or residual mixture if residuals are blended)	Incinerator Fuel, as Fired (residual(s) plus primary fuel)
Btu content (J/kg)		
Average	_____	_____
Minimum	_____	_____
Feed rate (kg/hr)	_____	_____
Feed rate (J/hr)(kg/hr x J/kg)	_____	_____
Total halogen content (% by weight)		
Average	_____	_____
Maximum	_____	_____
Total ash content (% by weight)		
Average	_____	_____
Maximum	_____	_____
Total water content (% by weight)		
Average	_____	_____
Maximum	_____	_____

Indicate if Office of Solid Waste survey has been submitted in lieu of response by circling the appropriate response.

Yes 1

No 2

[ ] Mark (X) this box if you attach a continuation sheet.

8.26 Provide the following information on the incinerator feed for the three largest (by capacity) incinerators that are used on-site to burn the residuals identified in your process block or residual treatment block flow diagram(s).

CBI

[⎯]

Incinerator	Stream ID Code	Listed Metal[1]	Total Metal Content (% by weight)	
			Avg.	Max.
1	N/A	N/A	N/A	N/A
2				
3				

Indicate if Office of Solid Waste survey has been submitted in lieu of response by circling the appropriate response.

Yes 1

No 2

---

[1]A listed metal is either an EP toxic metal or a metal that is included on the California List (as defined in section 3004(d)(2) of the Resource Conservation and Recovery Act)

[⎯] Mark (X) this box if you attach a continuation sheet.

8.27 On-Site Storage, Treatment or Disposal in a Land Treatment Site -- Complete the
following table for each on-site land treatment site that is used to store, treat, or
dispose of the residuals identified in your process block or residual treatment block
CBI flow diagram(s).

[_] Total area actively used for land treatment .... ___N/A_____ m^2

Average slope of site (degree incline) .... _____

Surface water runoff management[1] .... _____

Indicate if Office of Solid Waste survey has been submitted in lieu of response
by circling the appropriate response.

Yes 1

No 2

----

[1]Use the following codes to describe the management practices for surface water
runoff:

A = Collection prior to treatment   C = Canalization prior to treatment
B = Reapplication to the site   D = Other (specify) _____

[_] Mark (X) this box if you attach a continuation sheet.

8.28 Complete the following table for the residuals identified in your process block or
residual treatment block flow diagram(s) that are managed in an on-site land
CBI treatment operation.

[ ]

Stream ID Code	Year Land Treatment Initiated	Methods Used to Apply Residuals[1]	Application Rate[2]
N/A	N/A	N/A	N/A

Indicate if Office of Solid Waste survey has been submitted in lieu of response
by circling the appropriate response.

Yes 1

No 2

---

[1]Use the following codes to describe the method(s) used to apply residuals to the
land treatment site:

A = Surface spreading or spray irrigation without plow or disc incorporation
B = Surface spreading or spray irrigation with plow or disc incorporation to a
    depth of _____ cm
C = Subsurface injection to a depth of _____ cm
D = Other (specify) _____

[2]Use the following codes to designate the application rate:

A = Daily
B = Weekly
C = Monthly
D = Other (specify) _____

[ ] Mark (X) this box if you attach a continuation sheet.

8.29 On-Site Storage, Treatment, or Disposal in Surface Impoundments -- Complete the following table for the five largest (by volume) surface impoundments that are used on-site to treat, store, or dispose of the residuals

CBI   identified in your process block or residual treatment block flow diagram(s).

[_]

Impound-ment	Total Capacity (liters)	Specify Storage, Disposal or Treatment Type if Applicable[1]	Average Residency Time (days)[2]	SYNTHETIC LINER		CLAY LINER		LEACHATE COLLECTION SYSTEM		Stream ID Code
				No. of Liners	Thick-ness (cm)[3]	No. of Liners	Thickness (cm)[3]	Installed (Y/N)	Leachate Collected (Y/N)	
1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2										
3										
4										
5										

Indicate if Office of Solid Waste survey has been submitted in lieu of response by circling the appropriate response.

Yes 1

No 2

----

[1] Indicate "S" for storage, "D" for disposal, or use the codes provided in Exhibit 8-3 (which follows question 8.13) to designate treatment type

[2] Indicate the residency time for the surface impoundment's flow through stream. In addition, indicate in parenthesis using the following codes the frequency with which the impoundment is dredged to clear the residue that collects on the bottom:

A = Daily   C = Monthly
B = Weekly   D = Other (specify) _____

[3] Indicate the thickness of each liner

[_] Mark (X) this box if you attach a continuation sheet.

8.30 On-Site Disposal in Landfill Cells -- Complete the following table for the five largest (by volume) landfill cells that are used on-site to dispose of the residuals identified in your process block or residual treatment block flow diagram(s).

<u>CBI</u>

[ ]

Landfill Cell	Quantity per year (kg)	DRAINAGE LAYER Installed (Y/N)	Thickness (cm)	CLAY LINER No. of Liners	Thickness $(cm)^1$	SYNTHETIC LINER No. of Liners	Material	Thickness $(cm)^1$	Stream ID Code
1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2									
3									
4									
5									

Indicate if Office of Solid Waste survey has been submitted in lieu of response by circling the appropriate response.

Yes 1

No 2

---

^{1}Indicate the thickness of each liner

[ ] Mark (X) this box if you attach a continuation sheet.

8.31 State the total area actively used on-site for your landfill.

CBI

[ ] Total area actively used .... _____N/A_____ m^2

Indicate if Office of Solid Waste survey has been submitted in lieu of response by circling the appropriate response.

Yes 1

No 2

8.32 Complete the following table for the five largest landfill cells (by volume) that contain residuals identified in your process block or residual treatment block flow diagram(s).

CBI

[ ]

| Landfill Cell | WORKING COVER | | CAP DESIGN CLAY LAYER | | LEACHATE COLLECTION SYSTEM | |
	Average Use [1]	Thickness (cm)	Installed (Y/N)	Thickness (cm)	Installed (Y/N)	Leachate Collected (Y/N)
1	N/A	N/A	N/A	N/A	N/A	N/A
2						
3						
4						
5						

Indicate if Office of Solid Waste survey has been submitted in lieu of response by circling the appropriate response.

Yes 1

No 2

---

[1] Use the following codes to designate the average use rate:

A = Daily
B = Weekly
C = Monthly
D = Other (specify) _____

[ ] Mark (X) this box if you attach a continuation sheet.

8.33 On-Site Disposal in Injection Wells -- Complete the following table for the five
largest (by volume) injection wells that are used on-site to dispose of the residuals
CBI identified in your process block or residual treatment block flow diagram(s).

[⎯]

Well	Well Type[1]	Quantity Disposed (liters)[2]	Stream ID Code
1	N/A	N/A	N/A
2			
3			
4			
5			

Indicate if Office of Solid Waste survey has been submitted in lieu of response
by circling the appropriate response.

Yes 1

No 2

---

[1]Use the following codes to designate well type:

A = Wells that dispose below deepest groundwater with <10,000 mg/l of total
dissolved solids
B = Wells that dispose into a formation containing groundwater with <10,000 mg/l of
total dissolved solids
C = Wells that dispose above all groundwater
D = Other (specify) _____

[2]Indicate the quantity of listed substance disposed

[⎯] Mark (X) this box if you attach a continuation sheet.

General Instructions:

Questions 9.03-9.25 apply only to those processes and workers involved in manufacturing or processing the listed substance. Do not include workers involved in residual waste treatment unless they are involved in this treatment process on a regular basis (i.e., exclude maintenance workers, construction workers, etc.).

[⎯] Mark (X) this box if you attach a continuation sheet.

9.01   Mark (X) the appropriate column to indicate whether your company maintains records on the following data elements for hourly and salaried workers. Specify for each data element the year in which you began maintaining records and the number of years the records for that data element are maintained. (Refer to the instructions for further explanation and an example.)

CBI

[_]

Data Element	Data are Maintained for: Hourly Workers	Salaried Workers	Year in Which Data Collection Began	Number of Years Records Are Maintained
Date of hire	X	X	1982	10 years after termination
Age at hire	X	X	1982	Same
Work history of individual before employment at your facility	X	X	1982	Same
Sex	X	X	1982	Same
Race	X	X	1982	Same
Job titles	X	X	1982	Same
Start date for each job title	X	X	1982	Same
End date for each job title	X	X	1982	Same
Work area industrial hygiene monitoring data	X	X	1984	30
Personal employee monitoring data	X	X	1984	30
Employee medical history	X	X	1982	30
Employee smoking history	X	X	1982	30
Accident history	X	X	1984	30
Retirement date	X	X	1982	Until Death
Termination date	X	X	1982	10 years after termination
Vital status of retirees	X	X	1982	Until death
Cause of death data	X	X	1982	Until death

[_]   Mark (X) this box if you attach a continuation sheet.

9.02　In accordance with the instructions, complete the following table for each activity in which you engage.

CBI

[☐]

	a.	b.	c.	d.	e.
	Activity	Process Category	Yearly Quantity (kg)	Total Workers	Total Worker-Hours
	Manufacture of the listed substance	Enclosed	N/A	N/A	N/A
		Controlled Release	N/A	N/A	N/A
		Open	N/A	N/A	N/A
	On-site use as reactant	Enclosed	400	13	258
		Controlled Release	N/A	N/A	N/A
		Open	N/A	N/A	N/A
	On-site use as nonreactant	Enclosed	N/A	N/A	N/A
		Controlled Release	N/A	N/A	N/A
		Open	N/A	N/A	N/A
	On-site preparation of products	Enclosed	N/A	N/A	N/A
		Controlled Release	N/A	N/A	N/A
		Open	N/A	N/A	N/A

[☐]　Mark (X) this box if you attach a continuation sheet.

9.03 Provide a descriptive job title for each labor category at your facility that encompasses workers who may potentially come in contact with or be exposed to the listed substance.

CBI

[ ]

Labor Category	Descriptive Job Title
A	Production Supervisor
B	Assistant Production Supervisor
C	Quality Control Chemist
D	Operator
E	Helper
F	
G	
H	
I	
J	

[ ] Mark (X) this box if you attach a continuation sheet.

9.04 In accordance with the instructions, provide your process block flow diagram(s) and indicate associated work areas.

<u>CBI</u>

[☐] **Process type ....** ___Modified Polyglycol Reaction___
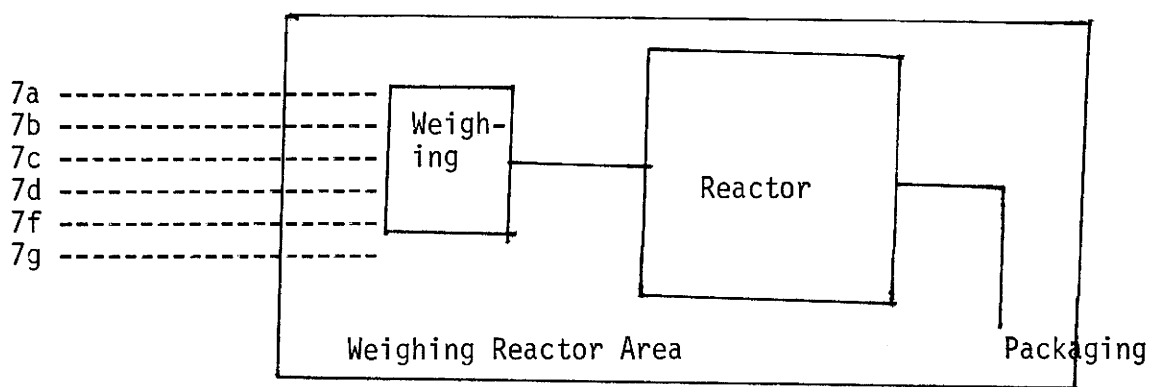
[☐] **Mark (X) this box if you attach a continuation sheet.**

9.05 Describe the various work area(s) shown in question 9.04 that encompass workers who may potentially come in contact with or be exposed to the listed substance. Add any additional areas not shown in the process block flow diagram in question 7.01 or 7.02. Photocopy this question and complete it separately for each process type.

CBI

[__] Process type .... ___Modified Polyglycol Reaction___

Work Area ID	Description of Work Areas and Worker Activities
1	Reaction Vessel, Charging chemicals and packaging
2	Quality Control - testing materials & final product
3	Changing Area - shower area for acid suit
4	
5	
6	
7	
8	
9	
10	

[__] Mark (X) this box if you attach a continuation sheet.

9.06 Complete the following table for each work area identified in question 9.05, and for each labor category at your facility that encompasses workers who may potentially come in contact with or be exposed to the listed substance. Photocopy this question CBI and complete it separately for each process type and work area.

[ ] Process type .... ___Modified Polyglycol Reaction___

Work area .... ___1___

Labor Category	Number of Workers Exposed	Mode of Exposure (e.g., direct skin contact)	Physical State of Listed Substance[1]	Average Length of Exposure Per Day[2]	Number of Days per Year Exposed
D,E	7	Skin contact	OL	E	6
A,B	2	Skin contact	OL	B	6

---

[1]Use the following codes to designate the physical state of the listed substance at the point of exposure:

GC = Gas (condensible at ambient temperature and pressure)
GU = Gas (uncondensible at ambient temperature and pressure; includes fumes, vapors, etc.)
SO = Solid

SY = Sludge or slurry
AL = Aqueous liquid
OL = Organic liquid
IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

[2]Use the following codes to designate average length of exposure per day:

A = 15 minutes or less
B = Greater than 15 minutes, but not exceeding 1 hour
C = Greater than one hour, but not exceeding 2 hours

D = Greater than 2 hours, but not exceeding 4 hours
E = Greater than 4 hours, but not exceeding 8 hours
F = Greater than 8 hours

[ ] Mark (X) this box if you attach a continuation sheet.

9.06 Complete the following table for each work area identified in question 9.05, and for each labor category at your facility that encompasses workers who may potentially come in contact with or be exposed to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

[‾] Process type .... __Modified Polyglycol Reaction__

Work area .... __2__

Labor Category	Number of Workers Exposed	Mode of Exposure (e.g., direct skin contact)	Physical State of Listed Substance[1]	Average Length of Exposure Per Day[2]	Number of Days per Year Exposed
C	4	Direct skin contact	OL	B	6

----

[1]Use the following codes to designate the physical state of the listed substance at the point of exposure:

GC = Gas (condensible at ambient temperature and pressure)
GU = Gas (uncondensible at ambient temperature and pressure; includes fumes, vapors, etc.)
SO = Solid

SY = Sludge or slurry
AL = Aqueous liquid
OL = Organic liquid
IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

[2]Use the following codes to designate average length of exposure per day:

A = 15 minutes or less
B = Greater than 15 minutes, but not exceeding 1 hour
C = Greater than one hour, but not exceeding 2 hours

D = Greater than 2 hours, but not exceeding 4 hours
E = Greater than 4 hours, but not exceeding 8 hours
F = Greater than 8 hours

[‾] Mark (X) this box if you attach a continuation sheet.

9.06 Complete the following table for each work area identified in question 9.05, and for each labor category at your facility that encompasses workers who may potentially come in contact with or be exposed to the listed substance. Photocopy this question CBI and complete it separately for each process type and work area.

[ ] Process type .... __Modified Polyglycol Reaction__

Work area .... __3__

Labor Category	Number of Workers Exposed	Mode of Exposure (e.g., direct skin contact)	Physical State of Listed Substance[1]	Average Length of Exposure Per Day[2]	Number of Days per Year Exposed
D,E	7	Skin contact	OL	A	6
A,B	2	Skin contact	OL	A	6

----

[1]Use the following codes to designate the physical state of the listed substance at the point of exposure:

GC = Gas (condensible at ambient temperature and pressure)
GU = Gas (uncondensible at ambient temperature and pressure; includes fumes, vapors, etc.)
SO = Solid

SY = Sludge or slurry
AL = Aqueous liquid
OL = Organic liquid
IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

[2]Use the following codes to designate average length of exposure per day:

A = 15 minutes or less
B = Greater than 15 minutes, but not exceeding 1 hour
C = Greater than one hour, but not exceeding 2 hours

D = Greater than 2 hours, but not exceeding 4 hours
E = Greater than 4 hours, but not exceeding 8 hours
F = Greater than 8 hours

[ ] Mark (X) this box if you attach a continuation sheet.

9.07 For each labor category represented in question 9.06, indicate the 8-hour Time Weighted Average (TWA) exposure levels and the 15-minute peak exposure levels. Photocopy this question and complete it separately for each process type and work area.

<u>CBI</u>

[_] Process type .... <u>Modified Polyglycol Reaction</u>

Work area .... <u>   1   </u>

Labor Category	8-hour TWA Exposure Level (ppm, mg/m^3, other-specify)	15-Minute Peak Exposure Level (ppm, mg/m^3, other-specify)
A,B,D,E	UK	UK

[_] Mark (X) this box if you attach a continuation sheet.

9.07 For each labor category represented in question 9.06, indicate the 8-hour Time Weighted Average (TWA) exposure levels and the 15-minute peak exposure levels. Photocopy this question and complete it separately for each process type and work area.

<u>CBI</u>

[__] Process type .... <u>Modified Polyglycol Reaction</u>

Work area .... <u>   2   </u>

Labor Category	8-hour TWA Exposure Level (ppm, mg/m^3, other-specify)	15-Minute Peak Exposure Level (ppm, mg/m^3, other-specify)
C	UK	UK

[__] Mark (X) this box if you attach a continuation sheet.

9.07 For each labor category represented in question 9.06, indicate the 8-hour Time Weighted Average (TWA) exposure levels and the 15-minute peak exposure levels. Photocopy this question and complete it separately for each process type and work area.

CBI

[_] Process type .... Modified Polyglycol Reaction

Work area 3

Labor Category	8-hour TWA Exposure Level (ppm, mg/m^3, other-specify)	15-Minute Peak Exposure Level (ppm, mg/m^3, other-specify)
A,B,D,E	UK	UK

[_] Mark (X) this box if you attach a continuation sheet.

9.08 If you monitor worker exposure to the listed substance, complete the following table.

CBI

[__]

Sample/Test	Work Area ID	Testing Frequency (per year)	Number of Samples (per test)	Who Samples[1]	Analyzed In-House (Y/N)	Number of Years Records Maintained
Personal breathing zone	N/A	N/A	N/A	N/A	N/A	N/A
General work area (air)						
Wipe samples						
Adhesive patches						
Blood samples						
Urine samples						
Respiratory samples						
Allergy tests						
Other (specify)						
Other (specify)						
Other (specify)						

----

[1]Use the following codes to designate who takes the monitoring samples:

A = Plant industrial hygienist
B = Insurance carrier
C = OSHA consultant
D = Other (specify) _____

[__] Mark (X) this box if you attach a continuation sheet.

9.09 For each sample type identified in question 9.08, describe the type of sampling and
CBI   analytical methodology used for each type of sample.

[‾]   Sample Type   Sampling and Analytical Methodology

           N/A   N/A
        _____   _____

        _____   _____

        _____   _____

        _____   _____

        _____   _____

9.10 If you conduct personal and/or ambient air monitoring for the listed substance,
      specify the following information for each equipment type used.

CBI
                                                              Averaging
[‾]   Equipment Type[1]   Detection Limit[2]   Manufacturer   Time (hr)   Model Number

           N/A   N/A   N/A   N/A   N/A
        _____   _____   _____   _____   _____

        _____   _____   _____   _____   _____

        _____   _____   _____   _____   _____

        _____   _____   _____   _____   _____

        _____   _____   _____   _____   _____

----

      [1]Use the following codes to designate personal air monitoring equipment types:

      A = Passive dosimeter
      B = Detector tube
      C = Charcoal filtration tube with pump
      D = Other (specify) _____

      Use the following codes to designate ambient air monitoring equipment types:

      E = Stationary monitors located within work area
      F = Stationary monitors located within facility
      G = Stationary monitors located at plant boundary
      H = Mobile monitoring equipment (specify) _____
      I = Other (specify) _____

      [2]Use the following codes to designate detection limit units:

      A = ppm
      B = Fibers/cubic centimeter (f/cc)
      C = Micrograms/cubic meter (μ/m^3)

[‾] Mark (X) this box if you attach a continuation sheet.

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9.11 If you conduct routine medical tests for monitoring the health effects of exposure to the listed substance, specify the type and frequency of the tests.

CBI

[_]

Test Description	Frequency (weekly, monthly, yearly, etc.)
N/A	N/A

[_] Mark (X) this box if you attach a continuation sheet.

PART C   ENGINEERING CONTROLS

9.12   Describe the **engineering controls** that you use to reduce or eliminate worker exposure
to the listed substance. Photocopy this question and complete it separately for each
process type and work area.

CBI

[‾] Process type .... Modified Polyglycol Reaction

Work area 1

Engineering Controls	Used (Y/N)	Year Installed	Upgraded (Y/N)	Year Upgraded
Ventilation:				
Local exhaust	Y	N/A	N	N/A
General dilution	Y	N/A	N/A	N/A
Other (specify)				
	N/A			
Vessel emission controls	Y	N/A	N	N/A
Mechanical loading or packaging equipment	N	N/A	N	N/A
Other (specify)				
Stinger for Charging substance	Y	N/A	N	N/A

[‾] Mark (X) this box if you attach a continuation sheet.

PART C ENGINEERING CONTROLS

9.12 Describe the **engineering** controls that you use to reduce or eliminate worker exposure
to the listed substance. Photocopy this question and complete it separately for each
process type and work area.

CBI

[ ] Process type .... <u>Modified Polyglycol Reaction</u>

Work area .... <u>2</u>

Engineering Controls	Used (Y/N)	Year Installed	Upgraded (Y/N)	Year Upgraded
Ventilation:				
Local exhaust	Y	N/A	Y	1988
General dilution	N/A			
Other (specify)				
_____	N/A			
Vessel emission controls	N/A			
Mechanical loading or packaging equipment	N/A			
Other (specify)				
_____				

[ ] Mark (X) this box if you attach a continuation sheet.

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PART C   ENGINEERING CONTROLS

9.12   Describe the engineering controls that you use to reduce or eliminate worker exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

[ ]   Process type ....   Modified Polyglycol Reaction

Work area   3

Engineering Controls	Used (Y/N)	Year Installed	Upgraded (Y/N)	Year Upgraded
Ventilation:				
Local exhaust	Y	N/A	N/A	N/A
General dilution	Y	N/A	N/A	N/A
Other (specify)				
_____	N/A			
Vessel emission controls	N/A			
Mechanical loading or packaging equipment	N/A			
Other (specify)				
_____				

[ ]   Mark (X) this box if you attach a continuation sheet.

9.13 Describe all equipment or process modifications you have made within the 3 years prior to the reporting year that have resulted in a reduction of worker exposure to the listed substance. For each equipment or process modification described, state the percentage reduction in exposure that resulted. Photocopy this question and complete it separately for each process type and work area.

CBI

[ ] Process type ....   Modified Polyglycol Reaction

Work area   1

Equipment or Process Modification	Reduction in Worker Exposure Per Year (%)
N/A	N/A

[ ] Mark (X) this box if you attach a continuation sheet.

9.13 Describe all equipment or process modifications you have made within the 3 years prior to the reporting year that have resulted in a reduction of worker exposure to the listed substance. For each equipment or process modification described, state the percentage reduction in exposure that resulted. Photocopy this question and complete it separately for each process type and work area.

CBI

[ ] Process type .... Modified Polyglycol Reaction

Work area 2

Equipment or Process Modification	Reduction in Worker Exposure Per Year (%)
N/A	N/A

[ ] Mark (X) this box if you attach a continuation sheet.

99

9.13 Describe all equipment or process modifications you have made within the 3 years prior to the reporting year that have resulted in a reduction of worker exposure to the listed substance. For each equipment or process modification described, state the percentage reduction in exposure that resulted. Photocopy this question and complete it separately for each process type and work area.

CBI

[ ] Process type ....   Modified Polyglycol Reaction

Work area   3

Equipment or Process Modification	Reduction in Worker Exposure Per Year (%)
N/A	N/A

[ ] Mark (X) this box if you attach a continuation sheet.

PART D PERSONAL PROTECTIVE AND SAFETY EQUIPMENT

9.14 Describe the personal protective and safety equipment that your workers wear or use in each work area in order to reduce or eliminate their exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

[ ] Process type .... _____ Modified Polyglycol Reaction _____

Work area .... _____ 1 _____

Equipment Types	Wear or Use (Y/N)
Respirators	Y
Safety goggles/glasses	Y
Face shields	Y
Coveralls	Y
Bib aprons	N
Chemical-resistant gloves	Y
Other (specify)	
Acid Suit	Y

[ ] Mark (X) this box if you attach a continuation sheet.

PART D PERSONAL PROTECTIVE AND SAFETY EQUIPMENT

9.14 Describe the personal protective and safety equipment that your workers wear or use in each work area in order to reduce or eliminate their exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

[⎯] Process type .... ___Modified Polyglycol Reaction_____

Work area .... ___2_____

Equipment Types	Wear or Use (Y/N)
Respirators	N
Safety goggles/glasses	Y
Face shields	N
Coveralls	N
Bib aprons	N
Chemical-resistant gloves	N
Other (specify)	
Lab Coat	Y

[⎯] Mark (X) this box if you attach a continuation sheet.

PART D PERSONAL PROTECTIVE AND SAFETY EQUIPMENT

9.14 Describe the personal protective and safety equipment that your workers wear or use in each work area in order to reduce or eliminate their exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

[̄] Process type .... ___Modified Polyglycol Reaction___

Work area .... ___3___

Equipment Types	Wear or Use (Y/N)
Respirators	N
Safety goggles/glasses	N
Face shields	N
Coveralls	N
Bib aprons	N
Chemical-resistant gloves	N
Other (specify)	

[̄] Mark (X) this box if you attach a continuation sheet.

100

9.15 If workers use respirators when working with the listed substance, specify for each
process type, the work areas where the respirators are used, the type of
respirators used, the average usage, whether or not the respirators were fit
tested, and the type and frequency of the fit tests. Photocopy this question and
complete it separately for each process type.

<u>CBI</u>

[ ] Process type .... ___Modified Polyglycol Reaction___

Work Area	Respirator Type	Average Usage[1]	Fit Tested (Y/N)	Type of Fit Test[2]	Frequency of Fit Tests (per year)
1	Organic cartridge	E	Y	QL	1

----

[1]Use the following codes to designate average usage:

A = Daily
B = Weekly
C = Monthly
D = Once a year
E = Other (specify) ___Batched as needed___

[2]Use the following codes to designate the type of fit test:

QL = Qualitative
QT = Quantitative

[ ] Mark (X) this box if you attach a continuation sheet.

9.16 Respirator Maintenance Program -- For each type of respirator used when working with the listed substance, specify the frequency of the maintenance activity, and the person who performs the maintenance activity. Photocopy this question and complete it separately for each respirator type.

Respirator type ...... _____

Respirator Maintenance Activity	Frequency[1]	Person Performing Activity[2]
Cleaning	N/A	N/A
Inspection	_____	_____
Replacement		
Cartridge/Canister	_____	_____
Respirator unit	_____	_____

----

[1]Use the following codes to designate the frequency of maintenance activity:

A = After each use
B = Weekly
C = Other (specify) _____

[2]Use the following codes to designate who performs the maintenance activity:

A = Plant industrial hygienist
B = Supervisor
C = Foreman
D = Other (specify) _____

[_] Mark (X) this box if you attach a continuation sheet.

9.17 Respirator Training Program -- Describe your respirator training and re-training programs for each type of respirator used when working with the listed substance. Photocopy this question and complete it separately for each respirator type.

a.

Respirator type ...... _____

Type of Training[1]	Number of Workers Trained	Location of Training[2]	Length of Training (hrs)	Person Performing Training[3]	Frequency[4]
N/A	N/A	N/A	N/A	N/A	N/A

b.

Respirator type .... _____

Type of Re-training[1]	Number of Workers Re-trained	Location of Re-Training[2]	Length of Re-Training (hrs)	Person Performing Re-Training[3]	Frequency[4]

----

[1]Use the following codes to designate the type of training or re-training:

E = Emergency
R = Routine

[2]Use the following codes to designate the location of training or re-training:

A = Outside plant instruction
B = In-house classroom instruction
C = On-the-job
D = Other (specify) _____

[3]Use the following codes to designate the person who performs the training or re-training:

A = Plant industrial hygienist
B = Supervisor
C = Foreman
D = Other (specify) _____

[4]Use the following codes to designate the frequency of respirator training or re-training:

A = Monthly
B = Fixed monthly
C = Other (specify) _____

_____

[_] Mark (X) this box if you attach a continuation sheet.

_____

9.18 For each type of personal protective clothing and safety equipment used when working with the listed substance, indicate whether you have conducted a permeation test on the clothing or equipment for the listed substance.

Clothing and Equipment		Permeation Tests Conducted (Y/N)
Coveralls		_____
Bib apron		_____
Gloves	N/A	_____
Other (specify)		
_____		_____
_____		_____
_____		_____

[ ] Mark (X) this box if you attach a continuation sheet.

PART E WORK PRACTICES

9.19 Describe all of the work practices and administrative controls used to reduce or
eliminate worker exposure to the listed substance (e.g., restrict entrance only to
authorized workers, mark areas with warning signs, insure worker detection and
monitoring practices, provide worker training programs, etc.). Photocopy this
CBI question and complete it separately for each process type and work area.

[ ]

Process type ......   Modified Polyglycol Reaction

Work area   1

Restricted work area must wear hard hat, safety glasses and chemical resistent

shoes, provide worker training program with on-site safety coordinator.

Shower & eye wash on location. When handling TDI workers use respirator with

organic cartridge and acid suit.

9.20 Indicate (X) how often you perform each housekeeping task used to clean up routine
leaks or spills of the listed substance. Photocopy this question and complete it
separately for each process type and work area.

Process type ......   Modified Polyglycol Reaction

Work area   1

Housekeeping Tasks	Less Than Once Per Day	1-2 Times Per Day	3-4 Times Per Day	More Than 4 Times Per Day
Sweeping	X			
Vacuuming	X			
Water flushing of floors	X			
Other (specify)				

[ ] Mark (X) this box if you attach a continuation sheet.

PART E WORK PRACTICES

9.19 Describe all of the work practices and administrative controls used to reduce or
eliminate worker exposure to the listed substance (e.g., restrict entrance only to
authorized workers, mark areas with warning signs, insure worker detection and
monitoring practices, provide worker training programs, etc.). Photocopy this
CBI question and complete it separately for each process type and work area.

[ ]
Process type ...... __Modified Polyglycol Reaction_____

Work area .... __2_____

__Provide worker training program with on-site safety coordinator. Use safety__

__glasses and chemical resistant shoes. Hood available if needed.__

_____

_____

9.20 Indicate (X) how often you perform each housekeeping task used to clean up routine
leaks or spills of the listed substance. Photocopy this question and complete it
separately for each process type and work area.

Process type ...... __Modified Polyglycol Reaction_____

Work area .... __2_____

Housekeeping Tasks	Less Than Once Per Day	1-2 Times Per Day	3-4 Times Per Day	More Than 4 Times Per Day
Sweeping	X			
Vacuuming	X			
Water flushing of floors	X			
Other (specify)				

[ ] Mark (X) this box if you attach a continuation sheet.

PART E   WORK PRACTICES

9.19   Describe all of the work practices and administrative controls used to reduce or
       eliminate worker exposure to the listed substance (e.g., restrict entrance only to
       authorized workers, mark areas with warning signs, insure worker detection and
       monitoring practices, provide worker training programs, etc.). Photocopy this
CBI   question and complete it separately for each process type and work area.

[ ]
       Process type ......   Modified Polyglycol Reaction

       Work area   3

       Provide worker training programs with on-site safety coordinator. Showers

       and eye wash available.

9.20   Indicate (X) how often you perform each housekeeping task used to clean up routine
       leaks or spills of the listed substance. Photocopy this question and complete it
       separately for each process type and work area.

       Process type ......   Modified Polyglycol Reaction

       Work area   3

Housekeeping Tasks	Less Than Once Per Day	1-2 Times Per Day	3-4 Times Per Day	More Than 4 Times Per Day
Sweeping	X			
Vacuuming	X			
Water flushing of floors	X			
Other (specify)				

[ ]   Mark (X) this box if you attach a continuation sheet.

105

9.21 Do you have a written medical action plan for responding to routine or emergency exposure to the listed substance?

Routine exposure   N/A

Yes 1

No 2

Emergency exposure

Yes 1

No 2

If yes, where are copies of the plan maintained?

Routine exposure: _____

Emergency exposure: _____

9.22 Do you have a written leak and spill cleanup plan that addresses the listed substance? Circle the appropriate response.

Yes .... (1)

No 2

If yes, where are copies of the plan maintained?   Raw Material Handling Guide on
location.
Has this plan been coordinated with state or local government response organizations?
Circle the appropriate response.

Yes 1

No .... (2)

9.23 Who is responsible for monitoring worker safety at your facility? Circle the appropriate response.   N/A

Plant safety specialist 1

Insurance carrier 2

OSHA consultant 3

Other (specify) _____   4

[__] Mark (X) this box if you attach a continuation sheet.

9.24 Who is responsible for safety and health training at your facility? Circle the appropriate response.   N/A

Plant safety specialist 1

Insurance carrier 2

OSHA consultant 3

Other (specify) _____   4

9.25 Who is responsible for the medical program at your facility? Circle the appropriate response.   N/A

Plant physician 1

Consulting physician 2

Plant nurse 3

Consulting nurse 4

Other (specify) _____   5

[__] Mark (X) this box if you attach a continuation sheet.

General Instructions:

Complete Part E (questions 10.23-10.35) for each non-routine release involving the listed substance that occurred during the reporting year. Report on all releases that are equal to or greater than the listed substance's reportable quantity value, RQ, unless the release is federally permitted as defined in 42 U.S.C. 9601, or is specifically excluded under the definition of release as defined in 40 CFR 302.3(22). Reportable quantities are codified in 40 CFR Part 302. If the listed substance is not a hazardous substance under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and, thus, does not have an RQ, then report releases that exceed 2,270 kg. If such a substance however, is designated as a CERCLA hazardous substance, then report those releases that are equal to or greater than the RQ. The facility may have answered these questions or similar questions under the Agency's Accidental Release Information Program and may already have this information readily available. Assign a number to each release and use this number throughout this part to identify the release. Releases over more than a 24-hour period are not single releases, i.e., the release of a chemical substance equal to or greater than an RQ must be reported as a separate release for each 24-hour period the release exceeds the RQ.

For questions 10.25-10.35, answer the questions for each release identified in question 10.23. Photocopy these questions and complete them separately for each release.

PART A GENERAL INFORMATION

10.01 Where is your facility located? Circle all appropriate responses.

CBI

[ ] Industrial area 1

Urban area 2

Residential area 3

Agricultural area ....(4)

Rural area ....(5)

Adjacent to a park or a recreational area 6

Within 1 mile of a navigable waterway 7

Within 1 mile of a school, university, hospital, or nursing home facility 8

Within 1 mile of a non-navigable waterway 9

Other (specify) _____ 10

[ ] Mark (X) this box if you attach a continuation sheet.

10.02 Specify the exact location of your facility (from central point where process unit is located) in terms of latitude and longitude or Universal Transverse Mercader (UTM) coordinates.

Latitude .... _30_ ° _00_ ' _00_ "

Longitude .... _94_ ° _57_ ' _12_ "

UTM coordinates .... Zone _15_ , Northing _332760_ , Easting _311357_

10.03 If you monitor meteorological conditions in the vicinity of your facility, provide the following information. N/A

Average annual precipitation .... _____ inches/year

Predominant wind direction .... _____

10.04 Indicate the depth to groundwater below your facility.

Depth to groundwater .... _____N/A_____ meters

10.05 For each on-site activity listed, indicate (Y/N/NA) all routine releases of the
CBI listed substance to the environment. (Refer to the instructions for a definition of
Y, N, and NA.)

[ ]

On-Site Activity	Environmental Release		
	Air	Water	Land
Manufacturing	N/A	N/A	N/A
Importing	N/A	N/A	N/A
Processing	Y	N	N
Otherwise used	N/A	N/A	N/A
Product or residual storage	N	N	N
Disposal	N/A	N/A	N/A
Transport	N/A	N/A	N/A

[ ] Mark (X) this box if you attach a continuation sheet.

10.06 Provide the following information for the listed substance and specify the level of precision for each item. (Refer to the instructions for further explanation and an example.)

CBI

[ ]

Quantity discharged to the air .... _____UK_____ kg/yr ± _N/A_ %

Quantity discharged in wastewaters .... _____UK_____ kg/yr ± _N/A_ %

Quantity managed as other waste in on-site
treatment, storage, or disposal units .... ____UK_____ kg/yr ± _N/A_ %

Quantity managed as other waste in off-site
treatment, storage, or disposal units .... _____UK_____ kg/yr ± _N/A_ %

[ ] Mark (X) this box if you attach a continuation sheet.

10.07 Complete the following table for each process stream containing the listed substance as identified in your process block or residual treatment block flow diagram(s). Photocopy this question and complete it separately for each process type.

<u>CBI</u>

[_]

Process type ..... _____

Process Stream ID Code	Media Affected[1]	Average Amount of Listed Substance Released[2]	Number of Batches/Year	Days of Operation/ Year
N/A	N/A	N/A	N/A	N/A

[1]Use the following codes to designate the media affected:

A = Air
B = Land
C = Groundwater
D = POTW
E = Navigable waterway
F = Non-navigable waterway
G = Other (specify) _____

[2]Specify the average amount of listed substance released to the environment and use the following codes to designate the units used to measure the release:

A = kg/day
B = kg/batch

[_] Mark (X) this box if you attach a continuation sheet.

10.08 Describe the control technologies used to minimize release of the listed substance
       for each process stream containing the listed substance as identified in your
       process block or residual treatment block flow diagram(s). Photocopy this question
CBI   and complete it separately for each process type.

[ ]   Process type ...... _____Modified Polyglycol Reaction_____

Stream ID Code	Control Technology	Percent Efficiency
7C	Direct charge to Reactor thru a Stinger	UK

[ ] Mark (X) this box if you attach a continuation sheet.

PART B   RELEASE TO AIR

10.09   Point Source Emissions -- Identify each emission point source containing the listed
        substance in terms of a Stream ID Code as identified in your process block or
<u>CBI</u>   residual treatment block flow diagram(s), and provide a description of each point
        source. Do not include raw material and product storage vents, or fugitive emission
[<u> </u>]   sources (e.g., equipment leaks). Photocopy this question and complete it separately
        for each process type.

Process type ......   <u>Modified Polyglycol Reaction</u>

Point Source ID Code	Description of Emission Point Source
N/A	N/A

[<u> </u>]   Mark (X) this box if you attach a continuation sheet.

10.10 Emission Characteristics - - Characterize the emissions for each Point Source ID Code identified in question 10.09 by completing the following table.

CBI

[_]

Point Source ID Code	Physical State[1]	Average Emissions (kg/day)	Frequency[2] (days/yr)	Duration[3] (min/day)	Average Emission Factor[4]	Maximum Emission Rate (kg/min)	Maximum Emission Rate Frequency (events/yr)	Maximum Emission Rate Duration (min/event)
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

[1]Use the following codes to designate physical state at the point of release:
G = Gas; V = Vapor; P = Particulate; A = Aerosol; O = Other (specify) _____

[2]Frequency of emission at any level of emission

[3]Duration of emission at any level of emission

[4]Average Emission Factor — Provide estimated (± 25 percent) emission factor (kg of emission per kg of production of listed substance)

10.11 Stack Parameters -- Identify the stack parameters for each Point Source ID Code identified in question 10.09 by completing the following table.

CBI

[__]

Point Source ID Code	Stack Height(m)	Stack Inner Diameter (at outlet) (m)	Exhaust Temperature (°C)	Emission Exit Velocity (m/sec)	Building Height(m)[1]	Building Width(m)[2]	Vent Type[3]
None							

[1]Height of attached or adjacent building

[2]Width of attached or adjacent building

[3]Use the following codes to designate vent type:

H = Horizontal
V = Vertical

[__] Mark (X) this box if you attach a continuation sheet.

115

10.12 If the listed substance is emitted in particulate form, indicate the particle size distribution for each Point Source ID Code identified in question 10.09.
Photocopy this question and complete it separately for each emission point source.

CBI

[__]

Point source ID code .... _____

Size Range (microns)	Mass Fraction (% ± % precision)
< 1	N/A
≥ 1 to < 10	N/A
≥ 10 to < 30	N/A
≥ 30 to < 50	N/A
≥ 50 to < 100	N/A
≥ 100 to < 500	N/A
≥ 500	N/A

Total = 100%

[__] Mark (X) this box if you attach a continuation sheet.

PART C FUGITIVE EMISSIONS

10.13 Equipment Leaks -- Complete the following table by providing the number of equipment types listed which are exposed to the listed substance and which are in service according to the specified weight percent of the listed substance passing through the component. Do this for each process type identified in your process block or residual treatment block flow diagram(s). Do not include equipment types that are not exposed to the listed substance. If this is a batch or intermittently operated process, give an overall percentage of time per year that the process type is exposed to the listed substance. Photocopy this question and complete it separately

CBI   for each process type.

[ ]   Process type ..... __Modified Polyglycol Reaction__

Percentage of time per year that the listed substance is exposed to this process type .... _____%

Equipment Type	Less than 5%	5-10%	11-25%	26-75%	76-99%	Greater than 99%
	Number of Components in Service by Weight Percent of Listed Substance in Process Stream					
Pump seals[1]						
Packed	2					
Mechanical						
Double mechanical[2]						
Compressor seals[1]	4					
Flanges	24					
Valves						
Gas[3]	12					
Liquid	10					1
Pressure relief devices[4] (Gas or vapor only)	2					
Sample connections						
Gas	2					
Liquid	2					
Open-ended lines[5] (e.g., purge, vent)						
Gas	0					
Liquid	0					1

[1]List the number of pump and compressor seals, rather than the number of pumps or compressors

10.13   continued on next page

[ ]   Mark (X) this box if you attach a continuation sheet.

10.13 (continued)

[2]If double mechanical seals are operated with the barrier (B) fluid at a pressure greater than the pump stuffing box pressure and/or equipped with a sensor (S) that will detect failure of the seal system, the barrier fluid system, or both, indicate with a "B" and/or an "S", respectively

[3]Conditions existing in the valve during normal operation

[4]Report all pressure relief devices in service, including those equipped with control devices

[5]Lines closed during normal operation that would be used during maintenance operations

---

10.14 Pressure Relief Devices with Controls -- Complete the following table for those pressure relief devices identified in 10.13 to indicate which pressure relief devices in service are controlled. If a pressure relief device is not controlled, enter "None" under column c.

CBI

[_]

a. Number of Pressure Relief Devices	b. Percent Chemical in Vessel[1]	c. Control Device	d. Estimated Control Efficiency[2]
2	<5%	Rupture disc	100%

[1]Refer to the table in question 10.13 and record the percent range given under the heading entitled "Number of Components in Service by Weight Percent of Listed Substance" (e.g., <5%, 5-10%, 11-25%, etc.)

[2]The EPA assigns a control efficiency of 100 percent for equipment leaks controlled with rupture discs under normal operating conditions. The EPA assigns a control efficiency of 98 percent for emissions routed to a flare under normal operating conditions

---

[_] Mark (X) this box if you attach a continuation sheet.

10.15 Equipment Leak Detection -- If a formal leak detection and repair program is in place, complete the following table regarding those leak detection and repair procedures. Photocopy this question and complete it separately for each process type.

CBI

[ ] Process type .... _____

Equipment Type	Leak Detection Concentration (ppm or mg/m^3) Measured at ____ Inches from Source	Detection Device[1]	Frequency of Leak Detection (per year)	Repairs Initiated (days after detection)	Repairs Completed (days after initiated)
Pump seals					
Packed	N/A	N/A	N/A	N/A	N/A
Mechanical					
Double mechanical					
Compressor seals					
Flanges					
Valves					
Gas					
Liquid					
Pressure relief devices (gas or vapor only)					
Sample connections					
Gas					
Liquid					
Open-ended lines					
Gas					
Liquid					

----

[1]Use the following codes to designate detection device:

POVA = Portable organic vapor analyzer
FPM = Fixed point monitoring
O = Other (specify) _____

[ ] Mark (X) this box if you attach a continuation sheet.

10.16 Raw Material, Intermediate and Product Storage Emissions - - Complete the following table by providing the information on each liquid raw material, intermediate, and product storage vessel containing the listed substance as identified in your process block or residual treatment block flow diagram(s).

CBI

[ ]

Vessel Type[1]	Floating Roof Seals[2]	Composition of Stored Materials[3]	Throughput (liters per year)	Vessel Filling Rate (gpm)	Vessel Filling Duration (min)	Vessel Inner Diameter (m)	Vessel Height (m)	Operating Vessel Volume (l)	Vessel Emission Controls[4]	Design Flow Rate[5]	Vent Diameter (cm)	Control Efficiency (%)	Basis for Estimate[6]
Drum	N/A	99.7	N/A	N/A	N/A	0.4	0.86	207	N/A	N/A	N/A	N/A	C

- -

[1]Use the following codes to designate vessel type:

F = Fixed roof
CIF = Contact internal floating roof
NCIF = Noncontact internal floating roof
EFR = External floating roof
P = Pressure vessel (indicate pressure rating)
H = Horizontal
U = Underground

[2]Use the following codes to designate floating roof seals:

MS1 = Mechanical shoe, primary
MS2 = Shoe-mounted secondary
MS2R = Rim-mounted, secondary
LM1 = Liquid-mounted resilient filled seal, primary
LM2 = Rim-mounted shield
LMW = Weather shield
VM1 = Vapor mounted resilient filled seal, primary
VM2 = Rim-mounted secondary
VMW = Weather shield

[3]Indicate weight percent of the listed substance. Include the total volatile organic content in parenthesis

[4]Other than floating roofs

[5]Gas/vapor flow rate the emission control device was designed to handle (specify flow rate units)

[6]Use the following codes to designate basis for estimate of control efficiency:

C = Calculations
S = Sampling

PART D RELEASE TO WATER

10.17 National Pollutant Discharge Elimination System (NPDES) Discharges -- Complete the
following information for each body of water NPDES discharges are discharged into.
CBI   If discharges are to more than one body of water, photocopy this question and
        complete it separately for each discharge.
[‾]
        Discharge source (stream ID code) ....   N/A
                                                                            _____

        Is discharge to a moving or standing body of water? Circle the appropriate
        response.

        Moving body of water 1

        Standing body of water 2

        Estimated average base flow (moving) .... _____ l/day

        Estimated average volume (standing) .... _____ l

        Average volume of discharge from facility .... _____ l/day

                                                                    _____ days/year

        Maximum volume of discharge from facility .... _____ l/day

                                                                    _____ days/year

        Average concentration of listed substance in discharge .... _____ mg/l or ppm

        Maximum concentration of listed substance in discharge .... _____ mg/l or ppm

10.18 Publicly Owned Treatment Works (POTW) -- Complete the following information for
        discharges containing the listed substance which are discharged to a POTW from your
CBI   facility.
                                                                            N/A
[‾]   Discharge source (stream ID code) .... _____

        Average volume of discharge from facility .... _____ l/day

                                                                    _____ days/year

        Maximum volume of discharge from facility .... _____ l/day

                                                                    _____ days/year

        Average concentration of listed substance in discharge .... _____ mg/l or ppm

        Maximum concentration of listed substance in discharge .... _____ mg/l or ppm

[‾] Mark (X) this box if you attach a continuation sheet.

10.19 Nonpoint Sources -- Complete the following information for each nonpoint discharge
       source. Examples of nonpoint sources include stormwater runoff, waste pile runoff,
       and runoff from product or raw material storage areas or other sources that contain
       the listed substance and may be discharged to surface water. Exclude NPDES or POTW
       discharges. If discharges are to more than one body of water, photocopy this
CBI   question and complete it separately for each discharge.

[ ]   Discharge source (stream ID code) .... _____N/A_____

       Is discharge to a moving or standing body of water? Circle the appropriate
       response.

       Moving body of water 1

       Standing body of water 2

       Estimated average base flow (moving) .... _____ l/day

       Estimated average volume (standing) .... _____ l

       Average volume of discharge from facility .... _____ l/day

                                                                   _____ days/year

       Maximum volume of discharge from facility .... _____ l/day

                                                                   _____ days/year

       Average concentration of listed substance in discharge .... _____ mg/l or ppm

       Maximum concentration of listed substance in discharge .... _____ mg/l or ppm

[ ]   Mark (X) this box if you attach a continuation sheet.

10.20   Releases to Soils -- Complete the following information for up to three random soil
        core samples that were taken and analyzed for the listed substance during the
        reporting year. Report the concentrations of the listed substance determined by
        soil core monitoring studies/tests. Specify the distance from the facility that
        soil cores were taken, and indicate the soil type and sample depth of the soil
CBI   cores. (Refer to the glossary for definitions of soil textures given in foo
        note 2.)

[̄]

Sample	Concentration (ug/kg) of Listed Substance (± % precision)	Distance from Plant (m)[1]	Soil Texture[2]	Sample Depth (cm)
1	N/A	N/A	N/A	N/A
2				
3				

----

[1]Use the following code to designate if the sample was taken within the facility's
boundary:

OS = On-site

[2]Use the following codes to designate soil texture:

A = Sand   G = Sandy clay loam
B = Loamy sand   H = Clay loam
C = Sandy loam   I = Silty clay loam
D = Loam   J = Sandy clay
E = Silty loam   K = Silty clay
F = Silt   L = Clay

_____

10.21   Releases to Groundwater -- Complete the following information for up to three random
        samples of groundwater from monitoring wells during the reporting year that were
CBI   analyzed for the listed substance. The average and maximum concentration refers to
        the listed substance.

[̄]

Sample	Distance from Plant (m)[1]	Well Depth (m)	Average Concentration (mg/l) (± % precision)	Maximum Concentration (mg/l) (± % precision)
1	N/A	N/A	N/A	N/A
2				
3				

----

[1]Use the following code to designate if the sample was taken within the facility's
boundary:

OS = On-site

_____

[̄]   Mark (X) this box if you attach a continuation sheet.

_____

10.22 Releases to Drinking Water -- Complete the following table for up to three samples from drinking water wells monitored during the reporting year. The average and maximum concentration refers to the listed substance.

CBI

[_]

Well	Well Depth (m)	Distance from Plant (m)[1]	Average Concentration (mg/l) (± % precision)	Maximum Concentration (mg/l) (± % precision)
1	N/A	N/A	N/A	N/A
2				
3				

---

[1]Use the following code to designate if the sample was taken within the facility's boundary:

OS = On-site

[_] Mark (X) this box if you attach a continuation sheet.

PART E NON-ROUTINE RELEASES

10.23 Indicate the date and time when the release occurred and when the release ceased or
       was stopped. If there were more than six releases, attach a continuation sheet and
       list all releases.

Release	Date Started	Time (am/pm)	Date Stopped	Time (am/pm)
1	N/A	N/A	N/A	N/A
2				
3				
4				
5				
6				

10.24 Specify the weather conditions at the time of each release.

Release	Wind Speed (km/hr)	Wind Direction	Humidity (%)	Temperature (°C)	Precipitation (Y/N)
1	N/A	N/A	N/A	N/A	N/A
2					
3					
4					
5					
6					

[ ] Mark (X) this box if you attach a continuation sheet.

125

10.25 Complete the following information for each media into which the listed substance was released. Any volatile substance that was released to land, but that was expected to volatilize, should be listed as a release to air.

Release No. .... _____

Media	Quantity (kg)	Method of Release	Migration Beyond Boundaries (Y/N)	Quantity Migrated (kg)
Land	N/A	N/A	N/A	N/A
Air				
Groundwater				
Surface water				

10.26 Specify the physical state and concentration of the listed substance at the time and point of release.

Release No. .... _____

Point of release .... _____

Physical state .... _____

Concentration (%) .... _____

N/A

10.27 Circle all appropriate responses relating to the cause and the effects of the release.

Release No. .... _____

Cause of Release

Equipment failure 1

Operator error 2

Bypass condition 3

Upset condition 4

Fire 5

Unknown 6

Other (specify) _____ 7

Results of Release

Spill 1

Vapor release 2

Explosion 3

Fire 4

Other (specify) _____ 5

N/A

[__] Mark (X) this box if you attach a continuation sheet.

10.28 Specify which authorities were notified of the release.

Release No. .... _____

a. **Federal**   N/A

    Agency   [_]

    Office   [_]

    Contact Person   [_]

    Address   [_]
                                          Street

                [_]
                                           City

                                                   [_]_]
                                                  State

    Telephone Number .... [_]_]_]-[_]_]_]-[_]_]_]_]

    Date Notified .... [_]_] [_]_] [_]_]
                                               Mo.   Day   Year

    Time Notified .... [_]_]_]_] am/pm

b. **State**

    Agency   [_]

    Office   [_]

    Contact Person   [_]

    Address   [_]
                                          Street

                [_]
                                           City

                                                   [_]_]
                                                  State

    Telephone Number .... [_]_]_]-[_]_]_]-[_]_]_]_]

    Date Notified .... [_]_] [_]_] [_]_]
                                               Mo.   Day   Year

    Time Notified .... [_]_]_]_] am/pm

10.28 continued below

[_] Mark (X) this box if you attach a continuation sheet.

10.28 (continued)

                                                          N/A

   c. <u>Local</u>

      Agency   [_]

      Office   [_]

      Contact Person [_]

      Address [_]
                                       Street

              [_]
                                     City

                                              [_][_]
                                              State

      Telephone Number .... [_][_][_]-[_][_][_]-[_][_][_][_]

      Date Notified .... [_][_] [_][_] [_][_]
                                                   Mo.   Day   Year

      Time Notified .... [_][_][_][_] am/pm

10.29 For each of the proximities listed below, indicate whether the population living
within that proximity was notified of, or evacuated because of the release. Specify
who notified the population, the number of people evacuated, if any, and the date
and time of day the evacuation began.

                               N/A
Release No. .... _____

Proximity to the Release	Notified of Release (Y/N)	Notifying Person	Notifying Person's Telephone Number	Area Evacuated (Y/N)	Number of Persons Evacuated	Date and Time of Day Evacuation Began
1/4 mile	_____	_____	_____	_____	_____	_____
1/2 mile	_____	_____	_____	_____	_____	_____
1 mile	_____	_____	_____	_____	_____	_____
Other (specify)	_____	_____	_____	_____	_____	_____

[_] Mark (X) this box if you attach a continuation sheet.

10.30 Specify the number of personal injuries or casualties resulting from the release.

Release No. .... __N/A__

Number of injuries to facility employees .... _____

Number of injuries to general population .... _____

Number of deaths to facility employees .... _____

Number of deaths to general population .... _____

10.31 Indicate who conducted cleanup activities, and the dates over which the cleanup was performed.

Release No. .... __N/A__

Name [_]

Address [_]
                                              Street

[_]
                                              City

[_][_]   [_][_][_][_][_]--[_][_][_][_]
State   Zip

Telephone Number .... [_][_][_]-[_][_][_]-[_][_][_][_]

Date Cleanup Initiated .... [_][_][_][_]
                                                                 Mo.   Year

Date Cleanup Completed (or expected) .... [_][_][_][_]
                                                                    Mo.   Year

---

10.32 Briefly describe the release prevention practices and policies (backup systems, containment systems, training programs, etc.) in place at the facility at the time the release occurred.

Release No. .... __N/A__

_____

_____

_____

_____

_____

[_] Mark (X) this box if you attach a continuation sheet.

10.33 Indicate which of the prevention practices and policies listed in question 10.32
       were ineffective in preventing the release from reaching the environment.

       Release No. .... N/A

       _____

       _____

       _____

       _____

10.34 Describe all repairs and/or preventive measures (management practices, operational
       changes, etc.) made to equipment or operations as a result of the release.

       Release No. .... N/A

       _____

       _____

       _____

       _____

10.35 Describe additional preventive measures that will be taken to minimize the
       possibilities of recurrence.

       Release No. .... N/A

       _____

       _____

       _____

       _____

[ ] Mark (X) this box if you attach a continuation sheet.

APPENDIX I: List of Continuation Sheets

Attach continuation sheets for sections of this form and optional information after this page. In column 1, clearly identify the continuation sheet by listing the question number to which it relates. In column 2, enter the inclusive page numbers of the continuation sheet for each question number.

Question Number (1)	Continuation Sheet Page Numbers (2)
4.02	8

[ ] Mark (X) this box if you attach a continuation sheet.

MATERIAL SAFETY DATA SHEET

I. PRODUCT IDENTIFICATION

PRODUCT NAME...............: Mondur TD-80 (All Grades)
PRODUCT CODE NUMBER........: E-002
CHEMICAL FAMILY............: Aromatic Isocyanate
CHEMICAL NAME..............: Toluene Diisocyanate (TDI)
SYNONYMS...................: Benzene, 1,3-diisocyanato methyl-
CAS NUMBER.................: 26471-62-5
T.S.C.A. STATUS............: This product is listed on the TSCA Inventory.
OSHA HAZARD COMMUNICATION
  STATUS...................: This product is hazardous under the criteria of
the Federal OSHA Hazard Communication Standard 29 CFR 1910.1200.
CHEMICAL FORMULA...........: $C_9H_6N_2O_2$

II. HAZARDOUS INGREDIENTS

COMPONENTS:	%:	OSHA-PEL	ACGIH-TLV
2,4-Toluene Diisocyanate* (TDI) CAS# 584-84-9	80	0.02 ppm STEL 0.005 ppm 8HR TWA	0.005 ppm TWA 0.02 ppm STEL
2,6-Toluene Diisocyanate* (TDI) CAS# 91-08-7	20	Not Established	Not Established

*For Section 302 and 313 SARA information refer to Page 6, Section IX, SARA.

III. PHYSICAL DATA

APPEARANCE.................: Liquid
COLOR.....................: Water white to pale yellow
ODOR......................: Sharp, pungent
ODOR THRESHOLD............: Greater than TLV of 0.005 ppm
MOLECULAR WEIGHT..........: 174
MELT POINT/FREEZE POINT...: Approx. 55°F (13°C) for TDI
BOILING POINT.............: Approx. 484°F (251°C) for TDI
VAPOR PRESSURE............: Approx. 0.025 mmHg @ 77°F (25°C) for TDI
VAPOR DENSITY (AIR=1).....: 6.0 for TDI
pH........................: Not Applicable
SPECIFIC GRAVITY..........: 1.22 @ 77°F (25°C)
BULK DENSITY..............: 10.18 lbs/gal
SOLUBILITY IN WATER.......: Not Soluble. Reacts slowly with water at normal
                            room temperature to liberate CO_2 gas.
% VOLATILE BY VOLUME......: Negligible

MB 321 REV 10-86

IV. FIRE & EXPLOSION DATA

FLASH POINT $^{\circ}F(^{\circ}C)$........: 260°F (127°C) Pensky-Martens Closed Cup
FLAMMABLE LIMITS -
  Lel.....................: 0.9%
  Uel.....................: 9.5%
EXTINGUISHING MEDIA.......: Dry chemical (e.g. monoammonium phosphate, potassium sulfate, and potassium chloride), carbon dioxide, high expansion (proteinic) chemical foam, water spray for large fires. <u>Caution</u>: Reaction between water or foam and hot TDI can be vigorous.
SPECIAL FIRE FIGHTING PROCEDURES/UNUSUAL FIRE OR EXPLOSION HAZARDS:
Full emergency equipment with self-contained breathing apparatus and full protective clothing (such as rubber gloves, boots, bands around legs, arms and waist) should be worn by fire fighters. No skin surface should be exposed. During a fire, TDI vapors and other irritating, highly toxic gases may generated by thermal decomposition or combustion. (See Section VIII). At temperatures greater than 350°F (177°C) TDI forms carbodiimides with the release of CO_2 which can cause pressure build-up in closed containers. Explosive rupture is possible. Therefore, use cold water to cool fire-exposed containers.

V. HUMAN HEALTH DATA

PRIMARY ROUTE(S) OF
  ENTRY...................: Inhalation. Skin contact from liquid, vapors or aerosols.
EFFECTS AND SYMPTOMS OF OVEREXPOSURE
  INHALATION
    <u>Acute Exposure.</u> TDI vapors or mist at concentrations above the TLV can irritate (burning sensation) the mucous membranes in the respiratory tract (nose, throat, lungs) causing runny nose, sore throat, coughing, chest discomfort, shortness of breath and reduced lung function (breathing obstruction). Persons with a preexisting, nonspecific bronchial hyperreactivity can respond to concentrations below the TLV with similar symptoms as well as asthma attack. Exposure well above the TLV may lead to bronchitis, bronchial spasm and pulmonary edema (fluid in lungs). These effects are usually reversible. Chemical or hypersensitive pneumonitis, with flu-like symptoms (e.g., fever, chills), has also been reported. These symptoms can be delayed up to several hours after exposure.
    <u>Chronic Exposure.</u> As a result of previous repeated overexposures or a single large dose, certain individuals may develop isocyanate sensitization (chemical asthma) which will cause them to react to a later exposure to isocyanate at levels well below the TLV. These symptoms, which can include chest tightness, wheezing, cough, shortness of breath or asthmatic attack, could be immediate or delayed up to several hours after exposure. Similar to many non-specific asthmatic responses, there are reports that once sensitized an individual can experience these symptoms upon exposure to dust, cold air or other irritants. This increased lung sensitivity can persist for weeks and in severe cases for several years. Chronic overexposure to isocyanate has also been reported to cause lung damage (including decrease in lung function) which may be permanent. Sensitization can either be temporary or permanent.

V. HUMAN HEALTH DATA (Continued)

SKIN CONTACT
Acute Exposure. Isocyanates react with skin protein and moisture and can cause irritation which may include the following symptoms: reddening, swelling, rash, scaling or blistering. Cured material is difficult to remove.

Chronic Exposure. Prolonged contact can cause reddening, swelling, rash, scaling, blistering, and, in some cases, skin sensitization. Individuals who have developed a skin sensitization can develop these symptoms as a result of contact with very small amounts of liquid material or as a result of exposure to vapor.

EYE CONTACT
Acute Exposure. Liquid, aerosols or vapors are severely irritating and can cause pain, tearing, reddening and swelling. If left untreated, corneal damage can occur and injury is slow to heal. However, damage is usually reversible. See Section VI for treatment.

Chronic Exposure. Prolonged vapor contact may cause conjunctivitis.

INGESTION
Acute Exposure. Can result in irritation and corrosive action in the mouth, stomach tissue and digestive tract. Symptoms can include sore throat, abdominal pain, nausea, vomiting and diarrhea.

Chronic Exposure. None Found

MEDICAL CONDITIONS
AGGRAVATED BY EXPOSURE..: Asthma, other respiratory disorders (bronchitis, emphysema, bronchial hyperreactivity), skin allergies, eczema.

CARCINOGENICITY...........: No carcinogenic activity was observed in lifetime inhalation studies in rats and mice (International Isocyanate Institute).

NTP....................: The National Toxicology Program reported that TDI caused an increase in the number of tumors in exposed rats over those counted in non-exposed rats. The TDI was administered in corn-oil and introduced into the stomach through a tube. Based on this study, the NTP has listed TDI as a substance that may reasonably be anticipated to be a carcinogen in its Fourth Annual Report on Carcinogens.

IARC...................: IARC has announced that it will list TDI as a substance for which there is sufficient evidence for its carcinogenicity in experimental animals but inadequate evidence for the carcinogenicity of TDI to humans (IARC Monograph 39).

OSHA...................: Not listed.

EXPOSURE LIMITS
OSHA PEL..................: 0.02 ppm STEL/0.005 ppm 8HR TWA for 2,4'-TDI
ACGIH TLV................: 0.005 ppm TWA/0.02 ppm STEL

VI. EMERGENCY & FIRST AID PROCEDURES

EYE CONTACT................: Flush with copious amounts of water, preferably lukewarm for at least 15 minutes holding eyelids open all the time. Refer individual to physician or an ophthalmologist for immediate follow-up.

VI. EMERGENCY & FIRST AID PROCEDURE (Continued)

SKIN CONTACT..............: Remove contaminated clothing immediately. Wash affected areas thoroughly with soap and water for at least 15 minutes. Tincture of green soap and water is also effective in removing isocyanates. Wash contaminated clothing thoroughly before reuse. For severe exposures, get under safety shower after removing clothing, then get medical attention. For lesser exposures, seek medical attention if irritation develops or persists after the area is washed.

INHALATION................: Move to an area free from risk of further exposure. Administer oxygen or artificial respiration as needed. Obtain medical attention. Asthmatic-type symptoms may develop and may be immediate or delayed up to several hours. Consult physician.

INGESTION.................: Do not induce vomiting. Give 1 to 2 cups of milk or water to drink. DO NOT GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. Consult physician.

NOTE TO PHYSICIAN.........: **Eyes**. Stain for evidence of corneal injury. If cornea is burned, instill antibiotic steroid preparation frequently. Workplace vapors have produced reversible corneal epithelial edema impairing vision. **Skin**. This compound is a known skin sensitizer. Treat symptomatically as for contact dermatitis or thermal burns. **Ingestion**. Treat symptomatically. There is no specific antidote. Inducing vomiting is contraindicated because of the irritating nature of this compound. **Respiratory.** This compound is a known pulmonary sensitizer. Treatment is essentially symptomatic. An individual having a skin or pulmonary sensitization reaction to this material should be removed from exposure to any isocyanate.

VII. EMPLOYEE PROTECTION RECOMMENDATIONS

EYE PROTECTION............: Liquid chemical goggles or full-face shield. Contact lenses should not be worn. If vapor exposure is causing irritation, use a full-face, air-supplied respirator.

SKIN PROTECTION...........: Chemical resistant gloves (butyl rubber, nitrile rubber, polyvinyl alcohol). However, please note that PVA degrades in water. Cover as much of the exposed skin area as possible with appropriate clothing. If skin creams are used, keep the area covered only by the cream to a minimum.

RESPIRATORY PROTECTION....: An approved positive pressure air-supplied respirator is required whenever TDI concentrations are not known or exceed the Short-Term Exposure or Ceiling Limit of 0.02 ppm or exceed the 8-hour Time Weighted Average TLV of 0.005 ppm. An approved air-supplied respirator with full facepiece must also be worn during spray application, even if exhaust ventilation is used. For emergency and other conditions where the exposure limits may be greatly exceeded, use an approved, positive pressure self-contained breathing apparatus. TDI has poor warning properties since the odor at which TDI can be smelled is substantially higher than 0.02 ppm. Observe OSHA regulations for respirator use (29 CFR 1910.134).

VII. EMPLOYEE PROTECTION RECOMMENDATIONS (Continued)

VENTILATION...............: Local exhaust should be used to maintain levels below the TLV whenever TDI is handled, processed, or spray-applied. At normal room temperatures (70°F) TDI levels quickly exceed the TLV unless properly ventilated. Standard reference sources regarding industrial ventilation (e.g., ACGIH Industrial Ventilation) should be consulted for guidance about adequate ventilation.

MONITORING................: TDI exposure levels must be monitored by accepted monitoring techniques to ensure that the TLV is not exceeded. (Contact Mobay for guidance). See Volume 1 (Chapter 17) and Volume 3 (Chapter 3) in Patty's Industrial Hygiene and Toxicology for sampling strategy.

MEDICAL SURVEILLANCE......: Medical supervision of all employees who handle or come in contact with TDI is recommended. These should include preemployment and periodic medical examinations with respiratory function tests (FEV, FVC as a minimum). Persons with asthmatic-type conditions, chronic bronchitis, other chronic respiratory diseases or recurrent skin eczema or sensitization should be excluded from working with TDI. Once a person is diagnosed as sensitized to TDI, no further exposure can be permitted.

OTHER.....................: Safety showers and eyewash stations should be available. Educate and train employees in safe use of product. Follow all label instructions.

VIII. REACTIVITY DATA

STABILITY.................: Stable under normal conditions.

POLYMERIZATION............: May occur if in contact with moisture or other materials which react with isocyanates. Self-reaction may occur at temperatures over 350°F (177°C) or at lower temperatures if sufficient time is involved. See Section IV.

INCOMPATIBILITY
   (MATERIALS TO AVOID)....: Water, amines, strong bases, alcohols. Will cause some corrosion to copper alloys and aluminum. Reacts with water to form heat, CO_2 and insoluble ureas.

HAZARDOUS DECOMPOSITION
   PRODUCTS...............: By high heat and fire: carbon monoxide, oxides of nitrogen, traces of HCN, TDI vapors and mist.

IX. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Evacuate and ventilate spill area; dike spill to prevent entry into water system; wear full protective equipment, including respiratory equipment during clean-up. (See Section VII).

Major Spill: Call Mobay at 412/923-1800. If transportation spill, call CHEMTREC 800/424-9300. If temporary control of isocyanate vapor is required, a blanket of protein foam (available at most fire departments) may be placed over the spill. Large quantities may be pumped into closed, but not sealed, container for disposal.

IX. SPILL OR LEAK PROCEDURES (Continued)

Minor Spill: Absorb isocyanate with sawdust or other absorbent, shovel into suitable unsealed containers, transport to well-ventilated area (outside) and treat with neutralizing solution: mixture of water (80%) with non-ionic surfactant Tergitol TMN-10 (20%), or; water (90%), concentrated ammonia (3-8%) and detergent (2%). Add about 10 parts or neutralizer per part of isocyanate, with mixing. Allow to stand uncovered for 48 hours to let CO_2 escape.

Clean-up: Decontaminate floor with decontamination solution fetting stand for at least 15 minutes.

CERCLA (SUPERFUND) REPORTABLE QUANTITY: 100 pounds for TDI

WASTE DISPOSAL METHOD.....: Follow all federal, state or local regulations. TDI must be disposed of in a permitted incinerator or landfill. Incineration is the preferred method for liquids. Solids are usually incinerated or landfilled. Empty containers must be handled with care due to product residue. Decontaminate containers prior to disposal. Empty decontaminated containers should be crushed to prevent reuse. DO NOT HEAT OR CUT EMPTY CONTAINER WITH ELECTRIC OR GAS TORCH. (See Sections IV and VIII). Vapors and gases may be highly toxic.

RCRA STATUS................: TDI is listed as a hazardous waste (No. U-223) under Title 40 Code of Federal Regulations, Section 261.33 (f). The residue from decontaminating a TDI spill is also classified as a hazardous waste under Section 261.3 (c)(2) or RCRA.

SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT (SARA), TITLE III:

Section 302 - Extremely Hazardous Substances: 2,4-Toluene Diisocyanate (TDI)
CAS# 584-84-9 = 80%
2,6-Toluene Diisocyanate (TDI)
CAS# 91-08-7 = 20%

Section 313 - Toxic Chemicals: 2,4-Toluene Diisocyanate (TDI)
CAS# 584-84-9 = 80%
2,6-Toluene Diisocyanate (TDI)
CAS# 91-08-7 = 20%

X. SPECIAL PRECAUTIONS & STORAGE DATA

STORAGE TEMPERATURE
(MIN./MAX.)..............: $70^{\circ}F$ $(21^{\circ}C)/90^{\circ}F$ $(32^{\circ}C)$

AVERAGE SHELF LIFE........: 12 months

SPECIAL SENSITIVITY
(HEAT, LIGHT, MOISTURE).: If container is exposed to high heat, $375^{\circ}F$ $(177^{\circ}C)$ it can be pressurized and possibly rupture. TDI reacts slowly with water to form polyureas and liberates CO_2 gas. This gas can cause sealed containers to expand and possibly rupture.

PRECAUTIONS TO BE TAKEN
IN HANDLING AND STORING.: Store in tightly closed containers to prevent moisture contamination. Do not reseal if contamination is suspected. Prevent all contact. Do not breathe the vapors. Warning properties (irritation of the eyes, nose and throat or odor) are not adequate to prevent chronic overexposure from inhalation. This material can produce asthmatic sensitization upon either single inhalation exposure to a relatively high concentration or upon repeated inhalation exposures to lower concentrations. Exposure to vapors of heated TDI can be extremely dangerous. Employee education and training in safe handling of this product are required under the OSHA Hazard Communication Standard.

XI. SHIPPING DATA

D.O.T. SHIPPING NAME......: Toluene Diisocyanate
TECHNICAL SHIPPING NAME...: Toluene Diisocyanate (TDI)
D.O.T. HAZARD CLASS.......: Poison B
UN/NA NO..................: UN 2078
PRODUCT RQ................: 100 pounds
D.O.T. LABELS.............: Poison
D.O.T. PLACARDS...........: Poison
FRT. CLASS BULK...........: Toluene Diisocyanate
FRT. CLASS PKG............: Chemicals, NOI (Toluene Diisocyanate) NMFC 60000
PRODUCT LABEL.............: Mondur TD-80 Product Label

XII. ANIMAL TOXICITY DATA

ACUTE TOXICITY
   ORAL, LD50..............: Range of 4130-6170 mg/kg (Rats and Mice)
   DERMAL, LD50............: Greater than 10,000 mg/kg (Rabbits)
   INHALATION, LC50.(4 hr).: Range of 16-50 ppm (Rat), 10 ppm (Mouse),
11 ppm (Rabbit), 13 ppm (Guinea Pig).
   EYE EFFECTS.............: Severe eye irritant capable of inducing corneal
                            opacity.
   SKIN EFFECTS............: Moderate skin irritant. Primary dermal
irritation score: 4.12/8.0 (Draize). However, repeated or prolonged
contact may culminate in severe skin irritation and/or corrosion.
   SENSITIZATION...........: Skin sensitizer in guinea pigs. One study
using guinea pigs reported that repeated skin contact with TDI caused
respiratory sensitization. Although poorly defined in experimental animal
models, TDI is known to be a pulmonary sensitizer in humans. In addition,
there is some evidence that cross-sensitization between different types of
diisocyanates may occur.
SUB-CHRONIC/CHRONIC TOXICITY: Sub-chronic and chronic animal studies show
that the primary effects of inhaling vapors and/or aerosols of TDI are
restricted to the pulmonary systems. Emphysema, pulmonary edema, pneumonitis
and rhinitis are common pathologic effects. Extended exposures to as low as
0.1 ppm TDI have induces pulmonary inflammation.
OTHER
   CARCINOGENICITY.........: The NTP conducted carcinogenesis studies of a
   commercial grade TDI using rats and mice in which the test material was
   diluted in corn oil and administered by gavage. The investigators concluded
   that TDI was carcinogenic in male and female rats (fibrosarcomas, pancreatic
   adenomas, neoplastic liver nodules and mammary gland fibrosarcomas) and
   female mice (hemangiosarcomas and hepatocellular adenomas). However,
   chronic inhalation studies in which rats and mice were exposed to 0.05 and
   0.15 ppm TDI (10-30 times recommended TLV, 8-hr level) induced no
   treatment-related tumorigenic effects. In these studies, both exposure
   levels produced extensive irritation to the nasal passages and upper
   respiratory system of the test animals indicating that suitable effective
   exposures were administered.

XII. ANIMAL TOXICITY DATA (Continued)

MUTAGENICITY............: TDI is positive in the Ames assay with activation. However, mammalian cell transformation assays using human lung cells and Syrian hamster kidney cells were negative, as were micronucleus tests using rats and mice.

TERATOGENICITY...........: Rats were exposed to an 80:20 mixture of 2,4- and 2,6- toluene diisocyanate vapor at analytical concentrations of 0.021, 0.12 and 0.48 ppm. Minimal fetotoxicity was observed at a maternally toxic concentrations of 0.48 ppm. The NOEL for maternal and developmental toxicity was 0.12 ppm. No embryotoxicity or teratogenicity was observed.

AQUATIC TOXICITY..........: LC_{50} - 96 hr (static): 165 mg/liter (Fathead minnow)

LC_{50} - 96 hr (static): Greater than 508 mg/liter (Grass shrimp)

LC_{50} - 24 hr (static): Greater than 500 mg/liter (Daphnia magna)

XIII. APPROVALS

REASON FOR ISSUE..........: Revising TLV in Sections II and V
PREPARED BY...............: G. L. Copeland
APPROVED BY...............: J. H. Chapman
TITLE.....................: Manager, Product Safety - Polyurethane & Coatings